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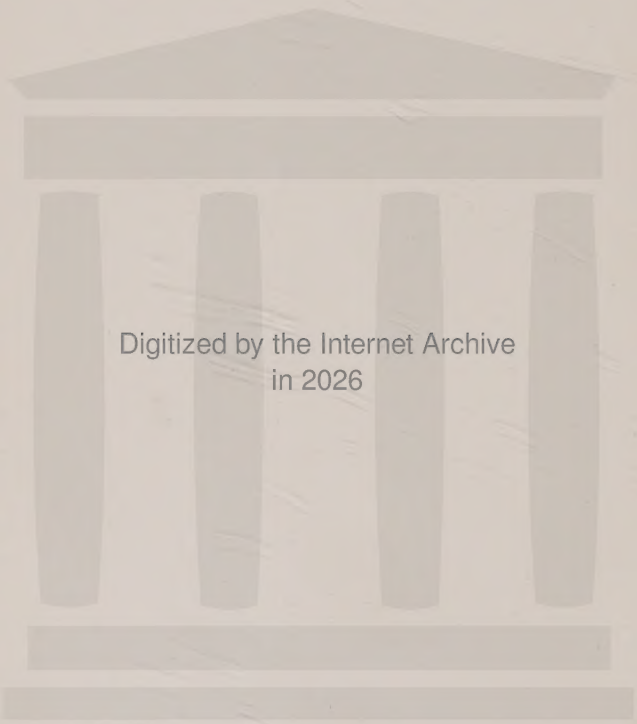
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THE GROUNDWORK
OF
PSYCHOLOGY

BY

G. F. STOUT, M.A. CAMB., M.A. OXON., LL.D. ABERDEEN

FELLOW OF THE BRITISH ACADEMY; PROFESSOR OF LOGIC AND METAPHYSICS IN THE UNIVERSITY OF ST. ANDREWS: LATE FELLOW OF ST. JOHN'S COLLEGE, CAMBRIDGE, AND WILDE READER IN MENTAL PHILOSOPHY IN THE UNIVERSITY OF OXFORD; EDITOR OF "MIND"; AUTHOR OF "A MANUAL OF PSYCHOLOGY"; ETC.

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PREFACE

THE aim of this book is to present a general view of mental process and mental development which shall be comprehensive and yet not vague and sketchy. I have attempted to omit all matter which can be omitted without interfering with my main purpose. Thus I have passed by all questions of detail connected with the Psychology of the Special Senses. My endeavor has been to present only what is essential to insight into the constitution of our mental life as a whole.

The work is a new one. It is not an abridgment of my *Manual of Psychology*. Even where the matter presented is substantially the same, the mode of presentation is different. The two books have no more in common than is inevitable in works on the same subject by the same person. In some respects the *Groundwork* is in my own opinion an improvement on the *Manual*, because, since the *Manual* was written, my own views on certain questions have become more clear and precise. One distinctive feature of the present work is the free use which it makes of material derived from observation of young children.

I am indebted to Mr. A. F. Shand for a valuable chapter on the Psychology of the Tender Emotions. I am also indebted to him for many useful suggestions mainly gathered from manuscript notes which he kindly communicated to me.

My best thanks are also due to Mr. Boyce Gibson and Mr. H. Sturt for their kindness in looking over proofs and in offering valuable suggestions and criticisms. The index is the work of my brother, Mr. J. F. Stout.

G. F. STOUT.

JUNE 19, 1903.

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THE GROUNDWORK OF PSYCHOLOGY

CHAPTER I

THE SUBJECT-MATTER OF PSYCHOLOGY

Psychology treats of psychical states and processes, their objects as such, and the conditions of their occurrence. We have to inquire: (1) What is a psychical state or process? (2) What is meant by saying that it has an object, and in what way is psychology concerned with such objects? (3) Of what nature are the conditions of its occurrence?

What is a Psychical Process? — A psychical process is a process forming part of the life history of some individual consciousness. It is some one's experience, and it actually exists only while it is being actually experienced. I experience the sensation of yellow. When I turn away and think of something else, the sensation ceases to exist in ceasing to be experienced. On the contrary, the orange continues to be yellow when I no longer look at it, and it was yellow before I began to look at it. Yellowness as a quality of the orange is not a psychical state.

The Relation of Psychical Process to its Object. — Turning to our second question, — What do we mean when we say that a psychical process has an object? — we have first to note that subject and object are terms that

have meaning only in relation to each other. What is this relation?

Unhappily there is much ambiguity and confusion in current usage. Sometimes the relation of subject and object is identified with the relation between psychical process and its material conditions. The vibrations of a bell, the consequent agitation of the air, and the resulting occurrences in the ear and brain are regarded as objective in contrast with the sensation of sound which arises in connection with them. Sometimes only the conditions external to the body are said to be objective; those within the body are ranked as subjective. Thus a singing in the ears is said to be a subjective sensation because its material conditions are subjective in the sense of being found within the body itself, independently of stimulation from outside.

Both these usages agree in treating the distinction of subject and object as one of causality or of condition and consequence or something analogous.

There would be no harm in this were it not that the terms are imperatively required for another purpose. They are required to express a relation which cannot be expressed in any other way. This relation is unique and ultimate, and it cannot therefore be formally defined. But we may so indicate it as to make plain what is meant.

Consider the following list: Rejoicing, hoping, fearing, desiring, disliking, believing, questioning, doubting, being perplexed, feeling interest, failing to understand, purposing, choosing. Each of these psychical states implies by its intrinsic nature a reference to something other than itself, which in common speech we should call its object. To choose is to choose something, to question is to question something, to fear is to fear something, and so on.

The choosing, questioning, and fearing are subjective processes; what in any case is chosen, called in question, or feared is the object of these processes.

The subjective process may be contrasted with its object in various ways. They differ in their time relations. When I think of a future event as such, and desire it, the processes of thinking and desiring are not future, but present. Besides such formal differences there are also material differences. Subjective processes have a positive nature distinctively belonging to them, and not to their objects. Consider the process of questioning. When you inquire, What is this? or What next? the question expresses your subjective attitude only. The object you are thinking of is not thought of as having an interrogative nature. In asking the question you presuppose that so far as your object itself is concerned the answer is already predetermined. It is only you who hesitate between alternatives. Similarly with searching and believing. You search more or less keenly, you believe more or less strongly. The strength of your belief and the keenness of your search are qualifications of your subjective attitude, and not of the object.

Subjective State not synonymous with Psychical State. — All subjective states are psychical; but not all psychical states are subjective. Sensations in general, so far as they enter into the relation of subject and object at all, fall to the side of the object, and not to that of the subject. When I listen to the sound of a bell, the act of listening is subjective. But the sensation of sound is my object. I attend to it. I discriminate it from other simultaneous sounds, and perhaps compare it with these. I refer it to the bell as its cause. I note or attempt to note its quality, its

degree of loudness, its duration. I like it or dislike it. It is essentially an object in relation to these subjective processes of attending, discriminating, comparing, etc. The same holds good of sensations in general, such as those of sight, pressure, taste, and smell. They are all psychical states. They actually exist only while they are being actually experienced. But so far as they enter into the relation of subject and object at all, they are objective and not subjective.

How the Psychologist is concerned with Objects. — The psychologist is concerned with sensations, inasmuch as they are psychical states. But he is also concerned with objects as such, whether they possess a psychical nature or not. His primary and distinctive interest is in the subjective side of the subject-object relation. But it is impossible to treat of subjective states without reference to their objects. It is impossible, for instance, to think of attention without reference to something attended to, or of a specific case of attention without reference to something specific which is attended to. The essential point is that psychology considers objects only in their relation to subjective process. An object of cognitive process interests the psychologist only in so far as somebody knows it, or comes to know it, or attempts to know it, or forgets it, or remembers it, or fails to remember it, and so on. An object of volition interests the psychologist only in so far as some one wills it, or comes to will it, or ceases to will it, etc. His interest in the object known or willed is conditioned by his interest in the processes of knowing and willing.

Thus he has no direct concern with the constitution and laws of the external world. But it is his especial business to exhibit the process through which such a world

comes to be presented to the individual consciousness. He has no direct concern with spatial relations. But it is part of his task to show how the young child becomes aware of such relations. He is not called upon to define the real distinction between right and wrong, or to determine the answer to any properly ethical question; but it belongs to his business as a psychologist to show how the individual comes to make a distinction between what is morally right and what is morally wrong.

Nature of the "Subject." — There is one thorny question which we have so far evaded. We have spoken freely of subjective processes; but we have not discussed the nature of the subject whose processes they are. Yet it seems evident that attending implies some one who attends, that desiring implies some one who desires, and so on. Sensations also, though they are not subjective states, are states of a subject. They exist only in being experienced by some one.

What has the psychologist to say concerning this some one who *owns* all the psychical states which are referred to one and the same mind? On one point there is general agreement. The psychical states belonging to the same subject are connected with each other in an altogether peculiar way so as to form a unity of a unique kind. But here there is a divergence of opinion. Some maintain that the term "subject" is merely a name for the unified system of psychical processes, actual and possible, present, past, and future. On this view, when we say that a desire is some one's desire, we merely mean that it forms part of a certain connected totality of conscious experiences. Others regard the subject not as identical with the unified experience, but as a ground of union, a unifying principle.

It is supposed to be something which persists through its varying states and binds them together.

As psychologists we are not bound to decide in favor of either of these opposing doctrines. For, as psychologists, our concern is with psychical states and processes, and the unifying principle, if it exists, can only be known to us in and through the unity and continuity of conscious life, which it makes possible. We have no independent knowledge of it which could be of assistance to us in our special line of inquiry. The student of physical science is in a similar position as regards the problem of the thing and its qualities. He can do his work quite well without ever inquiring whether a material thing is simply the total complex of what are called its attributes, or a connecting principle which binds these attributes together. We need not attempt to determine what is ultimately implied in the use of the term "subject," just as the chemist or physicist need not attempt to determine what is ultimately implied in the use of the term "thing."

What we have to investigate is the unity and continuity of the individual consciousness in its various forms, phases, and stages of development.

In this investigation there is one principle never to be lost sight of. The unity of the subject is inseparably correlated with the unity of its object as such. As typical examples of the unity of consciousness we may take the connection of a desire and its gratification, or that of asking a question and finding or receiving an answer. The continuity of desire and its gratification implies that what is obtained is identified with what was desired. Similarly the question which is answered must be identified with the question which was asked. In general, psychical process is one and continuous only in virtue of

the recognized identity of its object. I am one in so far as my world is one.

Conditions of Psychical Process. — We come now to the third of the questions with which we started. Psychology investigates the conditions of the occurrence of psychical states. What are these? In part they are themselves psychical. They fall within the process of consciousness itself. Conscious life is a development in which preceding stages form the basis and presupposition of succeeding stages. But this internal development is not self-supporting. It requires a multitude of contributory conditions which are not themselves psychical states or processes. The flow of individual consciousness is closely connected with and constantly dependent on a particular bodily organism with its organs of sense and movement. The psychologist cannot give a systematic account of psychical process without reference to these bodily conditions. He is also compelled at every step to recognize the existence of what are called psychical or mental *dispositions*, inherited and acquired. Our actual experience at any moment is determined by conditions which are not themselves actual experience, but the abiding after-effects left behind by prior experiences. I recognize a man to-day because I met him yesterday, although I may not have thought of him in the interval. This can only be because my experience of yesterday has left behind an after-effect which has persisted through the intervening time and now determines my present experience. This residual after-effect is an acquired disposition.

Again, what are called in ordinary language friendship and enmity are acquired dispositions of a complex character rather than actual psychical processes. Friendship

involves such actual psychical processes as being glad at a person's prosperity, grieved at his misfortune, rejoiced to meet him, sorry to part from him, and so on. But these psychical states are merely partial and transient manifestations of the permanent friendly disposition. This is the abiding condition of these varying phases of actual emotion.

The difference between the musical faculty of a Mozart and that of a man who can hardly learn to tell one note from another is a difference in inherited disposition.

There are three ways in which dispositions may be regarded by the psychologist. Primarily he knows them by the manner in which they operate in determining psychical process. It is from this point of view that he is led in the first instance to *posit* their existence at all. So regarded, they are merely permanent possibilities of psychical process. But of course they must in reality be more than this. A naked possibility is nothing. A possibility must be founded in the constitution of actual existence. What kind of actual existence does a psychical disposition possess? It is sometimes said to be an unconscious state, or modification of the subject, and the subject considered as the possessor of such unconscious states or modifications is called a soul. Against this I have nothing to say. It may well be nearer to the ultimate truth than any other statement. But to the psychologist the conception of a soul is not helpful. He has no independent means of knowing anything about it which could be useful to him. For him the term "soul" is virtually only another name for the total system of psychical dispositions and psychical processes. But he has another clue which is more useful. Psychical dispositions, as well as psychical processes, have physiological correlates in states of nervous tissue. A psychical disposition is

represented on the physiological side by a permanent modification of the substance of the brain. This may be called a physiological disposition. I do not say that the physiological disposition is identical with the psychical. But the two correspond in such a way that for psychological purposes it is within limits a valid procedure to treat them as identical.

CHAPTER II

METHOD AND SOURCES OF DATA

Method of Psychology. — The business of Psychology is to furnish a systematic and coherent account of the flow of psychical process in its various forms, phases, and stages, and of the conditions on which it depends. This involves description, generalization, and explanation.

Description in the case of complex process includes analysis. The elementary constituents of the complex process must be discriminated and their form of combination assigned. In dealing with constituents which are too simple to admit of further analysis, we must at least take care so to characterize them as to avoid ambiguity. We must point them out in such a manner that they will not be confused with anything else. This kind of pointing is illustrated by the mode in which I have attempted to indicate what is meant by a subjective process.

Analysis sometimes discriminates items A and B which are really separable, so that A is capable of existing in the absence of B, and B in the absence of A. Thus the total process of learning a list of dates includes the several acts of learning each separate date, and each of these could take place without the others. Sometimes A and B may be only distinguishable, but not separable. Thus pleasure and pain and the degree of intensity which belongs to them are indivisible; and the same holds good of the act of believing and the degree of conviction with which the

belief is held. Sometimes *A* may be separable from *B* but not *B* from *A*. It is possible to understand the meaning of a proposition without believing it; but it is not possible to believe it without understanding its meaning.

Generalization consists in the formulation of uniformities of coexistence and sequence. In psychology it consists in assigning the necessary and sufficient, or at any rate the necessary conditions of the occurrence of the various forms of psychical process. The conditions thus assigned are partly found within the flow of psychical life itself, and partly outside it. Thus the visual perception of an orange is in part conditioned by the structure and movement of the eye. But the structure and movement of the eye are facts of our bodily organization, not of our conscious life. On the other hand, the orange could not be perceived as such merely in virtue of ocular sensations. It is necessary that the percipient should have had previous conscious experience in which he has not only seen, but handled, tasted, and smelled oranges. Conditions of this kind are themselves psychical in their nature.

Many rough and ready psychological generalizations are embodied in common proverbs. *E.g.* "The burnt child dreads the fire." "Bullies are cowards." "New brooms sweep clean." "Put a beggar on horseback and he will ride to the devil." "The wish is father to the thought." "Pride goes before a fall."

Explanation consists in showing how general principles operate in relatively special cases, so as to answer the questions, why? or how? Thus on the basis of the general principles of the perception of spatial relations we may explain why the sun looks larger when it is near the horizon, or why the interval between two lines on a printed page appears greater when it is only brighter. Or, starting

from the general laws of emotion and sentiment, we may explain why when love gives place to dislike, the dislike is frequently more intense because it was preceded by love.

The power of explanation should involve some power of prediction more or less precise. This power is restricted in psychology because of the extreme complexity of the conditions of the mental life. But it is not absent. We can, for instance, prove that the exclusive use of certain kindergarten methods in the education of young children will arrest the development of imagination and lower the general level of intelligence. We can predict that close contact of savages with a civilization which they cannot assimilate will demoralize them in some respects, if not on the whole. We can predict that a body seen with one eye at a certain distance from the observer will alter its apparent configuration if the distribution of light and shade on its surface is altered in certain ways. Such examples might be indefinitely multiplied. But it is to be remembered that such prediction is nearly always conditional and liable to exceptions, owing to the presence of factors which counteract those on which the prediction is founded. For instance, we cannot by altering the distribution of light and shade cause a human face to appear concave instead of convex. The ordinary appearance is too familiar and habitual for this to be possible.

Sources of Data. — The sources of psychological data are manifold and diverse. But they can be ultimately grouped under three heads: (1) Introspection, or "the notice which the mind takes of its own operations" (Locke); (2) Inference from the behavior of others to their psychical processes; (3) The results of previous mental devel-

opment as supplying a clue to the processes through which they have been reached.

(1) *Introspection* is sometimes called inner perception, and also inner sense. The term "sense" in this application is, however, really nonsense. When I perceive a tree, the tree acts on a sense-organ — say the eye — and so gives rise to sensations of color. When I notice that I am desiring, doubting, impatient, or resentful, these processes do not act on any sense-organ or produce anything analogous to a sensation. My perception of them is not *sense*-perception. But though it is not sense-perception, it may be appropriately called perception. Roughly speaking, the essential character of perception is that the actual existence of its object operates as a factor directly determining our cognition of that object. When I perceive a tree, the tree itself as an actual existence contributes to determine my cognition of it by acting on my sense-organs, and so giving rise to sensations. This is not so when I merely remember the tree in its absence. Similarly, when I am feeling disappointed and take note of my feeling, the feeling itself as it exists at the moment is a factor determining my apprehension of it. In a mere remembrance of having felt disappointment in the past, this would not be so.

The actual existence and agency of what is perceived at the moment of perception is never the sole factor determining cognition, whether what is perceived be a material thing or a psychical state. Its controlling influence is always blended with that of previous experience and the direction of attention at the moment. What the botanist perceives when he looks at a plant is different from what a child of three would perceive, though both may have virtually the same sensations. The sense presentation is differently interpreted, and different features are noticed.

Similarly, what the trained psychologist may perceive when he observes his own anger may be different from what the untrained would discern. Both in observation of material phenomena and of psychical processes, what you find depends on what you bring with you. It depends on the questions you are primed with, and on your explicit or implicit anticipations, assumptions, inferences, or interpretations.

(2) Logically, the *knowledge of self* has always a certain priority as compared with knowledge of others. We can only interpret manifestations of mind in others on the analogy of our own mental processes. But in their actual development, the two kinds of knowledge show the closest interdependence. The growth of self-knowledge and of knowledge of others are virtually two aspects of a single process. It is mainly in the attempt to find out what goes on in other minds that we are led to notice what goes on in our own. Inner observation finds here the most potent motive and its guiding clue. Further, though in the first instance interpretation of the manifestations of the working of other minds logically presupposes acquaintance with our own, yet the success or failure of the interpretation supplies an all-important means of testing the validity and adequacy of our self-knowledge. The success or failure of our interpretation is tested by its power to cover all the relevant facts gained by observation and experiment in a coherent and systematic way. If we succeed in giving a coherent and systematic account of the behavior of young children and animals, this is the best verification we can have of the validity and adequacy of the psychological analysis which forms the basis of our explanation. It is hardly too much to say that while children and animals are mysteries to us, we do not fully understand ourselves.

(3) *Mental life* is a progressive development in which we come to perceive, imagine, believe, desire, will, love, or hate, objects which were not previously objects of our perception, imagination, belief, desire, or hatred, or love. So far as this gradual growth of the objective content of consciousness is due to psychical processes, proceeding in accordance with general laws, or in a systematic order, it is the business of the psychologist to trace it. Suppose that we have a series of letters by the same person, beginning at six years old, and continued at weekly intervals until he reaches the age of twenty. We may assume that the letters contain little in the way of direct description of the workings of his own mind. They are, let us say, occupied mainly with things he has seen or heard, things he wants to do or get, expressions of opinion, and of approval and disapproval of what goes on around him. Any one with a psychological bias, who should read these letters, would naturally attempt to frame a connected view of the course of mental development represented by them. This might be merely biographical. It might be only a more or less systematic representation of the mental history of this particular individual. But the reader of the letters may also attempt to generalize. He may attempt to discover in the particular case before him forms and principles of mental development which apply beyond this particular case. So far as he generalizes in this way he has entered upon the province of Psychology.

This illustration is drawn from the course of mental development in a single individual. But for Psychology the most important data of the kind are results of mental process common to whole societies, and in some cases to all normal human beings. For instance, the presentation of a surrounding world of material things and processes

is in certain broad features the same for all men. As the great logician, Sigwart, puts it, "We all comprehend and distinguish the same things in the same space and in the same spatial relations, and agree in the way in which we connect our experiences in time, and recognize the same similarities and differences." We know that this world, which is the common possession of normal adults, does not exist for the consciousness of the young child. The young child shows an extremely vague apprehension of spatial relations and a still vaguer apprehension of time relations. His apprehension of a world ordered in space and time, such as we ourselves have cognizance of, comes as the result of a long and complex series of psychical processes, and it therefore constitutes a psychological problem. But the existence and nature of the result, the fact that we do now all apprehend a world so constituted, forms an indispensable datum from which the psychologist starts, and to which he must constantly return in order to test his hypotheses concerning the nature of the process by which this result has been attained.

If we neglect to emphasize the importance of such relatively fixed and universal products of mental process as data and starting points, we are likely to form a wrong view of the general aim of psychology. It may be falsely supposed that it is the business of the psychologist to perform such feats as are attributed to Sherlock Holmes or to E. A. Poe's detective hero. It may be supposed that the psychologist ought to have the power of following the actual course of consciousness in this or that individual so as to be able to discover from slight indications what he has been thinking of during the last half-hour, or even to predict what he is going to think of during the next half-hour. Such demands are illegitimate. Like every

other science psychology must simplify its problems. It cannot, any more than mechanics, physics, or physiology, unravel the actual complexity of the concrete. Hence it must frame for itself by abstraction and generalization problems which are capable of solution. For this purpose, it is important to take as points of departure well-defined, general products of mental development, and then inquire into the nature of the process through which these products have arisen.

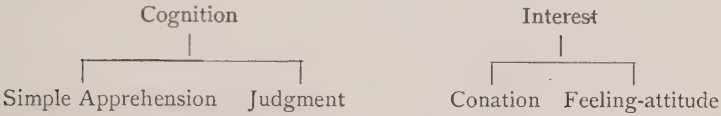
CHAPTER III

ULTIMATE DIVISION OF SUBJECTIVE PROCESSES

The aim of the present chapter is to distinguish the most general and ultimate kinds of subjective process. Our question is: What are the ultimately distinct modes of being conscious of an object?

The most usual answer is that there are three such modes, Cognition, Feeling-attitude, and Conation. Under Cognition is included the bare fact of the presentation of an object to consciousness together with the subjective attitudes of questioning, believing, disbelieving, doubting, and so on. Under Feeling-attitude is included the being agreeably or disagreeably affected towards an object, or feeling some kind of emotion towards it, such as anger, surprise, or fear. Under Conation are included all felt appetency or endeavor, all longing, wishing, craving, desiring, willing. This threefold division has been current since the time of Kant. Previously, Feeling-attitude had not been made a separate head, so that only two ultimate processes were recognized — the Cognitive and the Conative, knowing and willing. Of late there has again arisen a tendency to fall back upon a dual division, bringing Feeling-attitude and Conation under the same head. It is clear that they are much more closely akin to each other than either of them is to Cognition. It also seems clear that there is as fundamental a distinction between the bare thought of an object and the affirmation or denial of its

reality as there is between Feeling-attitude and Conation. The best plan is to adopt a most comprehensive dual division into "Cognition" on the one hand and "Interest" on the other. Cognition may then be subdivided under the heads, Simple Apprehension and Judgment; and Interest may be subdivided under the heads Conation and Feeling-attitude.



Simple Apprehension and Judgment. — First let us examine the distinction of Simple Apprehension and Judgment.[1] It is one thing to apprehend the meaning of a proposition and another to believe, disbelieve, doubt, or question it. To think of a thing is not the same as affirming or denying its existence.

This distinction is not merely formal. Simple apprehension is not merely distinguishable from Judgment. It is also separable from it in a partial and relative way. It is important to note the saving clause — "in a partial and relative way." I do not mean to say that the total subjective attitude at any moment can be one of simple apprehension without any admixture of judgment. On the other hand, it is clear that there can be no judgment without simple apprehension.

That would be judging without anything to judge about. I now proceed to give instances of the relative and partial separation of simple apprehension from judgment.

It is possible to be interested in an object without refer-

[1] This distinction is to be found in all ordinary text-books of logic, but not from a psychological point of view.

ence to its real existence. Thus the bare thought of being hissed may affect an actor disagreeably and the mere idea of a comic situation may excite laughter. Suppose that a man is absorbed in the enjoyment of the beauty of a picture. He is aware of the picture as really existing and so far his mental attitude is one of judgment or belief. But this unformulated judgment is in the background of consciousness. It has nothing to do with the man's enjoyment. His interest is not in the real existence of the picture but in the mere presentation of it. If it threatens to fall and he stretches out his hand to save it, there is a transition from interest in what is simply apprehended to interest in real existence. A similar change of attitude takes place if he passes from purely æsthetic contemplation to the business of purchasing the picture.

In the play of fancy, *e.g.* in day-dreaming, we do not attempt to conform our thoughts to reality. Throwing aside such restrictions, we shape the object of consciousness as we like. So far as this freedom extends (and it is never complete), the object is an object of simple apprehension and not of belief, disbelief, questioning, or doubt. We do not affirm, we do not deny, and we do not doubt its reality, so far as the merely imaginative attitude is maintained. We simply abstain from raising questions of this kind.

An illustration of a different sort may be drawn from the use of words in speaking, reading, writing, and silent thinking. The words as printed or written characters or as articulate sounds are somehow present to our consciousness. But we are not usually framing judgments about them. So far as we judge, we judge concerning that which the words signify. As articulate sounds or as written or printed characters, the words are in the main objects of simple apprehension merely.

Conation and Feeling-attitude.

Conation. — The peculiar nature of conative consciousness — of craving, longing, desiring, willing, etc. — is characterized by its relation to what is called its satisfaction or fulfilment. In so far as conation is satisfied or fulfilled, it disappears in its own satisfaction or fulfilment. Thus hunger disappears with eating and curiosity disappears when its questions are answered. Conation may cease in other ways either for a time or permanently. Thus it may be displaced or overborne by other interests, or it may die out through fatigue, or because it is persistently balked or disappointed. But the kind of ending which is distinctively prescribed for it by its own intrinsic nature is attained only when it terminates in its own fulfilment. It disappears in its own fulfilment as a question disappears in its answer. Just as the question is no longer a question when and so far as it is answered, so the desire to know the answer ceases to be a desire when and so far as the answer becomes known.

Conation and its satisfaction can never completely coincide in the same moment of consciousness. Otherwise the conation would from the outset be merged and lost in fulfilment, and it would therefore not be felt at all. In order that it may be felt there must be at least a partial delay of complete satisfaction. This is possible in two ways. In the first place, the satisfaction may come gradually, so that we are progressively becoming satisfied, and yet in each stage of the process we are partially unsatisfied. For instance, we sit down to a meal with a ravenous appetite; and in eating we gradually take off the edge of the appetite. None the less the appetite is still felt, though in a diminishing degree, until it is fully appeased — until it is satiated. In the second place, we may not only be par-

tially unsatisfied, but not even advancing towards full satisfaction. We may feel a keen appetite for food, when no food is accessible; we may long after something which is entirely beyond reach, such as the undoing of a past action.

The conative side of our nature is the *active* side. Whatever takes place or fails to take place in consequence of the intrinsic tendency of conative consciousness to find its own fulfilment is said to be *pro tanto* due to our activity. Successful activity is the self-fulfilment of conscious endeavor or purpose.

It is important to distinguish between the *Satisfaction* of conation and its *Object*. The Object of conative consciousness is constituted by the conditions of satisfaction as they appear to the subject in advance of their actual occurrence. This previous view of the conditions of satisfaction may be fragmentary and indefinite in varying degrees. It may be, in varying degrees, true or illusory. Without some anticipative cognizance of what we want there would be no conation in the proper sense, but at the most mere restlessness. But the anticipation may be of the vaguest kind. What is essential is that there should be some clew, however slight, so that our striving consciousness may not be absolutely blind and undirected. Take the case of wanting to know something. If we start with a definite question, we anticipate a correspondingly definite answer. But of course we do not know beforehand precisely what the answer is going to be. Otherwise we should not be seriously asking the question. To this extent, what we want is indefinitely apprehended by us. But in some cases there is not even a formal question. There is a vague awareness of ignorance or of confusion hard to formulate in any distinct way. We are puzzled but cannot lay our finger on the difficulty. It often happens in such cases, that a wrong question is

asked, so that the answer turns out to be more or less irrelevant. Or, to take a classical instance, a man of business is dissatisfied and longs for a life of retirement and leisure. Yet when he obtains what he thought himself to want, he discovers that it is not what he really desired. It is not actually satisfying. His previous view had been in part indefinite and in part illusory. To a very large extent we only find out what we want, if at all, in the process of attainment; and in the same way we are frequently discovering that we do not really want what we had supposed ourselves to want. The course of conative process towards satisfaction is marked by trial and failure, leading gradually to better-instructed and more successful trials.

The object of conation is always apprehended as change in what is regarded as an actual situation. The actual situation is apprehended as alterable. The change may be thought of either as the removal of some preëxisting feature of the situation or as the addition of some positive feature which is as yet non-existent. When the main emphasis is on the removal of what is actually present, conation is called aversion. Repugnance, hatred, dislike, regret, antipathy, etc., are forms of this negative direction of striving consciousness. When the main emphasis is on the introduction of what is actually absent, conation is called appetition. Special forms of this are longing, desire, aspiration, etc.

The total object of conative consciousness includes two parts: (1) what appears as the end, (2) what appears as the means. We wish, will, or desire the end for its own sake, and we wish, will, or desire the means because without them the end is not attainable. However indifferent, or even repugnant, the means may be in themselves, yet in so far as they are means to the end they are part of

the object of conation. This object remains relatively indefinite and fragmentary so long as the means are unspecified. We know completely what we want only when we know how to get it or see clearly that it is unattainable.

Feeling-attitude in all its variations is most intimately connected with conation. We may distinguish three groups of cases. Under the first come all those phases of feeling-attitude which occur as episodes in the life history of a preëxisting conation — all pains of disappointment or defeat and all pleasures of success or fruition, together with concomitant varieties of specific emotion, anger, fear, hope, despair, triumph, etc. These feelings occur in connection with the various ways and degrees in which conative tendencies are being satisfied or dissatisfied, furthered or hindered. In such instances it is evident both that conation and feeling-attitude are distinguishable, and also that they are blended in the most intimate unity. In the second group of cases feeling-attitude and conation emerge coincidently, so that we cannot ascribe priority to either. In toothache the disagreeable consciousness and aversion coincide. Indeed, it seems super-subtle to make a distinction between them. Common sense does not do so. It finds no occasion to recognize the presence of conation at all until some kind of attempt is made to obtain relief. But, in strictness, the conative attitude of aversion is present from the outset, and the attempt to obtain relief is a development of it. In the third group of cases, Feeling-attitude exists by itself without any appreciable intermixture of conative consciousness. Suppose that we are lying by the side of a brook on a summer day and simply allowing ourselves to be soothed by sights, sounds, odors, and our own healthy bodily sensations. Here there is certainly agreeable consciousness of ourselves

and of our surroundings. But it may be difficult or impossible to trace any felt conation. Our condition appears to be purely inactive. But in such experiences, the conative attitude is always lurking, as it were, behind the scenes, ready to emerge at once, if the pleasure-giving conditions are in any way interrupted or discontinued before satiety is reached, *e.g.* if the sun becomes unpleasantly hot, or the flies disturb us, or some one attempts to rouse us. The reason why conation fails to appear while the pleasure-giving condition continues is that it is continuously merged in its own satisfaction. There is always a potential conation and it is only in reference to this that the Feeling-attitude can properly be called *Interest.* For the term "interest" always involves reference to a satisfaction which is not yet completely attained. In the present class of instances the reference is to a satisfaction in which even the potential conation terminates. In other words, the reference is to *satiety* — that phase of the process in which continuance of the pleasure-giving condition would cease to give pleasure and would only bore us.

At this point we might fitly proceed to discuss the connection of Cognition and Interest. But I reserve this for a subsequent chapter on Attention, which is the meeting-point of Interest and Cognition. Before dealing with this topic it will be found convenient to say something about the relation of Body and Mind, and also about Sensation. These will form the subjects of the next two chapters.

CHAPTER IV

BODY AND MIND

General Nature of their Connection. — A multitude of the most familiar facts of ordinary experience point unmistakably to a most intimate and thoroughgoing interdependence of bodily process and psychical process. When a flame comes in contact with my skin, I feel a certain painful sensation. When I will to move my finger, my finger moves. Mental anxiety may produce headache, and headache may make us unequal to mental exertion.

Science extends the range of evidence beyond what is accessible to common-sense. Besides this, it has succeeded in distinguishing those bodily processes which are directly connected with the conscious life of a human being from those which are connected with it only indirectly. The psychic processes are directly connected with occurrences in the nervous system, and indirectly with occurrences in other tissues and organs. The function of the central nervous system is to control and combine the various processes which go on in different parts of the organism. From all parts of the organism impulses or waves of excitement are propagated to it along ingoing or afferent nerve-fibres, and in return impulses or waves of excitement are propagated from it along outgoing or efferent nerve-fibres to all parts of the organism. It thus makes possible the coöperation of different organs, binding them into a dynamic unity. Hence the immediate connection of psy-

chical processes with the process in the nervous system involves a mediate connection with all other parts of the body.

But the psychical processes of human beings are not directly connected with all parts of the nervous system, but only with that part of it which is situated within the skull. And even here the immediate connection seems to be mainly, if not exclusively, limited to the brain proper, the topmost layer of gray nervous tissue which is called the cortex of the cerebrum. Our psychical processes have as their immediate material correlate cortical or cerebral processes. The precise nature of the correlation is not known. But for psychological purposes, what is called the hypothesis of psychophysical parallelism supplies the most convenient way of formulating the facts, so far as we are acquainted with them.

Following this hypothesis we treat the connection as simply one of concomitance, and concomitant variation. When a certain psychical process occurs, a certain cerebral process occurs simultaneously with it. Variations in the nature of the psychical process are attended by strictly correspondent variations in the nature, and to some extent in the locality, of the correlated cerebral process. When the contact of my skin with a flame occasions a painful sensation, what happens is as follows: The contact of the flame with the skin sets up a wave of excitement in certain afferent or ingoing nerves, which is propagated through intermediate masses of gray matter till it reaches the cerebral cortex. There it produces a molecular disturbance, and coincidently with this, the psychical state, which I call the painful experience of being burned, comes into being. The external stimulus cannot give rise to the painful sensation without at the same time and in the same act giving

rise to the corresponding cortical process. Similarly, when I will to move my finger, and the finger in consequence moves, the psychic state, which I call my volition, is coincident with a certain agitation of the particles of the nervous tissue of my brain. This cerebral disturbance sets going currents of excitement which are finally propagated along outgoing nerves to the muscles which move my finger. These contract and the finger moves. The volition without the correlated cortical process would not move the finger. On the other hand, we cannot suppose that the correlated cortical process could exist without the volition. Hence it could not move the finger without the volition.

This hypothesis is, as I have said, simply a convenient way of formulating the facts so far as they are known to us. It lays no claim to established certainty, and it must not be taken to imply or suggest any metaphysical theory. Above all, it must not be supposed to imply that psychical processes are in any way products — not even bye-products — of the correlated nervous processes. Such a view in my opinion leads to intolerable absurdity. But this is not the place to discuss the metaphysical problem. What interests us psychologically is that the facts represented by the formula of psychophysical parallelism give us access to a great deal of useful knowledge concerning the conditions of psychical processes, and to some extent help us to understand their nature.

"Higher" and Lower Nervous Arrangements. — We now proceed to consider certain important aspects of the general correspondence of mental and nervous occurrences. (1) The correspondence of the distinction of higher and lower psychical processes with that of higher and lower

nervous arrangements. (2) The correlation of psychical dispositions with physiological dispositions.

Lower nervous arrangements are related to higher as the nervous system in general is related to the rest of the body. The nervous system is a unifying centre which connects in varying combinations the processes going on in other tissues and organs. Similarly, a relatively higher nervous arrangement combines and coördinates the workings of relatively lower nervous arrangements. Apart from the higher the actions of the lower are comparatively detached and isolated from each other. In relation to the rest of the nervous system, the cerebrum is a higher nervous arrangement. A frog, from which the cerebral hemispheres have been removed, can, by the application of appropriate stimuli, be induced to perform nearly all the movements which an entire frog is capable of executing. "When thrown into the water it begins to swim, and goes on swimming until it is exhausted. If placed on its back, it recovers its natural position. If its flanks be gently stroked, it will croak; and the croaks follow so regularly and surely upon the strokes that the animal can almost be played upon like a musical instrument."[1] The decapitated frog is capable of all the elementary movements necessary for the preservation of its existence. But they occur in detachment from each other. They are combined and coadjusted in varying ways in response to varying circumstances.

The whole nervous system, including the brain, appears to be throughout organized on a similar plan. Relatively lower nervous arrangements are coördinated and controlled in their operation by relatively higher, and these again by higher, and so on. When a man begins to learn to swim

[1] "Text-book of Physiology." By Michael Foster. 6th ed., pp. 1000–1001.

or to play the violin, the separate movements required are already roughly provided for by his preëxisting nervous organization. What he has to acquire is the due combination and coadjustment of these elementary movements in simultaneous and successive order. Thus acquisition involves the formation of a higher nervous arrangement which coördinates the action of the lower nervous mechanisms, using them as its instruments. Similarly, the pronunciation of words is connected with a special nervous arrangement for variously combining and coadjusting the movements of the tongue and larynx.

In general, the lower nervous arrangements are more *stably* organized than the higher. They are more fixed and uniform in their mode of action, less capable of varying responses to fluctuating conditions. "In the brainless frog, each stimulus evokes an appropriate movement," and always the same movement, whereas with the entire animal it is impossible to predict whether any result at all, and, if so, what result, will follow the application of the stimulus.[1] This distinction of higher and lower in nervous organization is correlated with a corresponding distinction of higher and lower in psychical processes. Playing on the violin is a higher mental process than the isolated performance of the elementary movements which are combined in it. The discovery of a theory binding together a multiplicity of detached facts in the unity of a single principle is a higher mental process than the apprehension of the several facts in comparative isolation. The systematic combination of successive acts in subordination to a single end or principle of conduct is a higher psychical process than the performance of similar acts on the detached impulse of the moment. As the psychical process is higher, so the nervous

[1] "Text-book of Physiology." By Michael Foster. 6th ed., pp. 1000–1001.

process correlative with it is correspondingly higher in the sense explained.

This is well illustrated by the gradual action of drugs and similar agents on the nervous system. The highest nervous arrangements, being least stably organized, are first affected, and then progressively the lower in descending order. The effect of alcohol may serve as an example. The first well-marked symptom is a diminution of self-consciousness. It is notorious that a man when slightly under the influence will boldly do and say things that in his normal state he would refrain from doing and saying, owing to the rapid representation of himself as he would appear to the eyes of others. At this stage he may begin to talk more fluently and perhaps more brilliantly than in his sober state. But the power of sustained and continuous thinking becomes more and more impaired as the alcohol takes more hold on his nervous system. There is a comparative absence of coherence in his talk, though it may continue to show isolated brilliancies. At a later stage, the incoherence and the limitation of range become more marked. The man "may repeatedly perform some such action as shaking hands or the asking of some question, without remembering that he has gone through the same performance in the previous moment." The finer movements — requiring accurate coördination and attention — are no longer possible. In a yet later stage such actions as walking cannot be performed, owing to the inability to balance the trunk and coördinate movements, but the purely reflex element in walking, the rhythmic movement of the legs, is still possible, for if supported on either side, the patient may still walk very well. Finally, coma intervenes — the drunken sleep.[1] Before leaving this

[1] This description is adapted from an article by W. MacDougall in *Mind*, N. S., No. 27, p. 380.

topic, there is one point which I wish to emphasize. It is that the physiological evidence is against what is called associationism. According to the associationist, higher mental processes are merely resultants formed by the combination or fusion of lower. For instance, the perception of an object is regarded as merely a complex of sensations. It is regarded as being merely these sensations combined in a group or cluster. But we have seen that the coördination of lower nervous processes depends on a relatively new and distinct nervous arrangement. According to the principle of psychophysical parallelism, this must mean that the synthesis of lower mental process in a higher unity depends on a relatively new and distinct mental process. The higher mental process does combine the lower, but it is not merely the lower in combination. It is rather their coördinating centre of unity.

Correlation of Mental and Physiological Dispositions.[1] — The most useful evidence and illustrations are derivable from diseases of memory — from cases of amnesia produced by pathological conditions. These conditions either destroy nervous dispositions or render them for a time inoperative. When this happens the psychical dispositions are correspondingly affected. We may distinguish three groups of cases. (*a*) Cases of general amnesia. (*b*) Cases of amnesia affecting special periods in the life of the individual. (*c*) Cases of amnesia affecting certain kinds of experience, while leaving others untouched.

(*a*) *General amnesia* may come on gradually or suddenly. A good instance of its gradual progress is supplied by the forgetfulness of old age. The retention of the most recent experiences is first impaired. At this stage a piece of business is likely to be forgotten altogether if it is interrupted.

[1] For the meaning of the term "disposition," see pp. 7–9 above.

The events of yesterday or of the day before, intentions then formed or orders received, are effaced from memory. It is only by gradual steps that forgetfulness descends towards the past. The reason is that, with the advance of age, nervous tissues, like other tissues, become less plastic, less easily modifiable. After fifty a new language or a new science are serious undertakings, and are as a rule only acquired imperfectly. Hence, old acquirements formed when the tissues were comparatively plastic, present most resistance to the encroachment of senile amnesia. In more advanced stages of senile decay we find that the advance of amnesia follows an order like that which we traced in the case of drunkenness. The relatively higher processes are first impaired, until the old man is reduced to second childhood.

General amnesia may occur suddenly, owing to a physical injury or a moral shock. The following is a typical case. A clergyman lost his consciousness for some days in consequence of a fall. On coming to himself, he had forgotten all that he had learned at school and college. Even his mother tongue had to be reacquired. He was reduced to the condition of an intelligent infant. His education had to recommence anew. After some months his memory returned, little by little, and became completely reëstablished.

(*b*) There are many instances, varying much in their character, in which forgetfulness relates to some particular period in the history of the individual. Abnormal conditions operating at a certain time create a discontinuity between the general state of the organism then and its usual state. This is accompanied by a corresponding discontinuity of conscious life. The dispositions formed under the abnormal conditions are not excitable under

normal conditions. Physical shock, such as may be caused by a blow on the head, often occasions forgetfulness of the circumstance of the accident, frequently extending to what happened a short time after it or before it. A child of four years, having fractured his skull, underwent a surgical operation. On his recovery he had forgotten both the accident and the operation. But at the age of five, in the delirium of a fever he gave a circumstantial account of them. It is matter of common knowledge that a man frequently forgets when he is sober what he has said and done when he was drunk. The somnambulist usually cannot remember what he has said in his sleep-talking or done in his sleep-walking. But on a recurrence of either state the thread of thought and action is resumed at the point where it left off. A young lady in a state of somnambulism snatched a locket from her sister containing some of their deceased brother's hair. She resisted attempts to take it from her, and before passing into ordinary sleep she placed it under her pillow, remarking, "Now I have hid it in safety." On waking in the morning she knew nothing of what had happened. When the somnambulism recurred a few days afterwards, she immediately began to look for the locket under her pillow. It had been removed in the interval. But she continued to search, saying: "It must be there. I put it there myself a few minutes ago."[1] Finally, we may refer to cases of double personality. One of the best as well as the oldest is that of an American lady who became totally oblivious of her previous existence after waking from a deep sleep which had lasted some days. Her whole environment, including both persons and things, was as strange to her as if she had been placed in it for the first time.

[1] "Carpenter's Mental Physiology," pp. 597–598.

She had to learn everything over again, and her progress was rapid. But she did not remember or recognize anything as belonging to her previous existence. This remained strange to her as if it had belonged to another person. A sleep like that which had initiated the change restored her to her original condition. But she was totally oblivious of all she had experienced in the interval. For more than two years there was a periodic alternation of the two states. If in one of these states she had come to know any person, she had to renew her acquaintance with him, when she passed into the other.

(*c*) The third group of cases is that in which dispositions connected with special kinds of experience are destroyed or disabled. The best illustrations are afforded by diseases of language, for which the technical term is *aphasia*. There is a special nervous arrangement for the coördination of the movements of the throat and larynx in the articulation of words. This is situated in the third frontal convolution of the left hemisphere of the brain in right-handed persons and of the right hemisphere in left-handed persons. When this part of the brain is destroyed or damaged the power of pronouncing words is correspondingly impaired or abolished. There is another special nervous arrangement, which has also been localized, for the perception of spoken language, as such. When this is injured or destroyed, the general acuteness of hearing need not be at all affected. Spoken language is still heard as a confused noise, but not as language. The elementary sounds are all presented. But they are not so discriminated and grouped as to form words and sentences. Hence the patient cannot understand what is said to him, though he may be able to speak, read, and write. This is called word-deafness. A slighter or more

restricted *lesion* of the same area may not give rise to word-deafness, but only to a failure to call to mind the sound of words when they are not actually heard. In cases of this kind words are lost in a definite order. First there are failures in the recall of proper names, then of other nouns, and only much more rarely of verbs, adjectives, and pronouns. The principle seems to be that those words are lost first which are least indispensable to the mind in framing corresponding thoughts.[1]

[1] On the subject of the localization of cerebral functions the student may consult Halliburton's "Physiology," 4th ed., 1901 (J. Murray), Chapter XLVIII.

CHAPTER V

SENSATION

We saw in Chapter I that sensations are psychical states inasmuch as they have actual existence only while they are actually experienced. We also pointed out that they are not subjective states, like attending and willing, but essentially objects. They are psychical objects. In order to complete our account of their distinctive nature we now add that they are psychical objects which normally come into being in consequence of the stimulation of afferent nerves conducting waves of excitement to the cerebral cortex. The excitement is initiated at the termination of the afferent nerves in external organs of sense, such as the skin, eye, or ear, or in the surfaces of the internal organs of the body, such as the stomach.

Sensory Revivals. — The various qualities of sense-experience, when they have once been presented, may be mentally revivable without a recurrence of the stimulus which first gave rise to them. Having seen the color red, I can picture it in my mind's eye without actually seeing it. Having actually heard a certain sound, I can hear it again in my mind's ear without any stimulation of my bodily ear. Such revivals differ in important respects from actual sensations, and they ought not therefore to be called sensations. They may be called sensory contents or sensory elements.

Plan of Treatment. — In dealing with sensations my plan of treatment will be as follows: First, I shall say something of the distinction between sensations as psychical states and the sensible qualities of external things. Next I shall refer to the physical and physiological conditions. I shall then give a general analysis of the nature of sensation. I shall draw attention to certain characters which sensations in general possess. Finally, I shall discuss the qualitative affinities of different kinds of sensation and examine the distinction between the higher senses and the lower.

Sensations *vs.* Sensible Qualities. — The distinction between sensations and sensible qualities of external things is of fundamental importance. Consider again an illustration given in the first chapter. On looking at an orange I experience a sensation of yellow. The sensation did not exist before I began to look at the orange and it ceases when I look away. But the orange was yellow before I looked at it, and when I look away it continues to be yellow. Yet the sensation and the sensible quality do, so to speak, interpenetrate each other. They have a common nature. The same quality which leads me to call the sensation one of yellow is also essential to the yellowness of the orange. Only in the first case it is regarded as a qualification of my psychical state and in the second as expressing the nature of something existing independently of me and of the vicissitudes of my sensuous experience. This something thus represented in terms of my sense-experience, but existing independently of it, is what I call an orange. We shall have something to say later on about the origin and development of this distinction between sensation and sensible quality. Here it will

be sufficient to draw attention to one point. It is never our sense-experience in its concrete fullness which qualifies the external thing. Only certain partial features or aspects of it enter into the constitution of the external world. While I look at the orange my visual sensation of yellow may vary in intensity and tinge of yellowness with the varying illumination or with the state of my eye. If I were attending to my sensation as such, I should note these changes and regard them as psychically real. But when I am occupied with the orange, I in part ignore them altogether and in part treat them as irrelevant — as making no difference to the orange itself. The artist in depicting the orange would have to note very carefully these differences of sensible appearance. Again, the visual appearance of the object varies very greatly in extent according to my distance from it. As I recede from the orange the yellow patch, considered merely as a sense-presentation, grows smaller and smaller until it vanishes altogether. But within wide limits of variation we normally fail to notice these differences in the extent of the sensation. We are interested in the real size of things perceived, and this remains the same while the sensation varies. Hence we have learned to ignore these variations. Patients blind from birth who have recovered their sight by an operation do notice such differences. They find it hard to understand how a house seen at a distance can be spacious enough to contain a man seen at their side. The artist has to educate himself to observe visual sensations as distinguished from external things. For he can only produce his effects by giving those who look at his pictures sensations similar to those which they would experience in looking at the real things.

It would carry us too far to adduce more illustrations.

The two points to be borne in mind are: (1) That sensible qualities are qualities of sensation regarded as expressing the nature of something existing independently of the mind which experiences the sensation. (2) That only certain partial aspects and features of our sense-experience assume this function. The rest can be ignored when our interest is concentrated on the external world. But it is the business of the psychologist who is dealing with sensations as psychical states to fix attention on them.

Stimulus and Sensation. — A full treatment of the physical and physiological conditions of sensation would include a detailed account of the special sense organs. For this we have no space. It will be sufficient to refer to one point of general interest bearing on the connection of stimulus and sensation. The general nature of the sensation excited depends not on the nature of the stimulus but on the structure of the sense organ and its nervous connections. However the organ of vision is stimulated, if any sensation results, it is one of light or color. Light and color sensations arise from pressure on the eye or a narcotic in the blood, as well as from vibrations of the ether. In a case of assault, a court of justice was inclined to take seriously the plaintiff's statement that he had seen his assailant in the illumination produced by a blow on the eye. Even in the absence of all external stimulation, we have a diffused sensation of gray due to purely organic conditions which probably affect the brain directly and not the eye. The case is the same for the ear as for the eye. Sensations of sound equally result, whether the organ of hearing is excited by mechanical or electrical stimulation or by vibrations of the particles of the air. In the skin temperature sensations arise only when certain nerve-

endings are stimulated, distinct from those which yield pressure-sensations. When a peppermint rolled on the tongue gives rise to sensations of sweetness, temperature, and pressure, it does so by acting on nerve-endings which are distinct for each kind of experience. It is disputed how far the general principle applies to specific varieties of sensation within the range of each sense. But in the case of the ear, at least, there is good reason for holding that there are distinct nerve-endings for tones of different pitch.

Characters which Sensations in General Possess. — The characters which sensations in general possess are: (1) *Quality*, (2) *Intensity*, (3) *Protensity*.

Such distinctions as that between blue and red, between sound and color, between a tone of one pitch and a tone of another pitch, between a salt taste and a bitter, or between taste and smell, are distinctions of *quality*. Definition is of course impossible. When two groups of sensations so differ in quality that they cannot be regarded as species of a common genus, the difference may be called one of *kind*. Sounds and colors are different kinds of sensation. They are not only different, but disparate or incomparable in quality.

Intensity presupposes quality. It is more or less of the same quality. Thus a tone of a given pitch may vary in loudness. The sensation of cold is always more or less cold. A sweet taste is more or less sweet. Intensity is a quite peculiar kind of quantity. Its special characteristic is that it cannot be divided into distinct parts, and that we cannot even conceive it to be so divided. We may say that one sensation of cold is more intense than another. But we cannot distinguish within the more intense cold

a part which is equal to the less intense cold and another by which it exceeds the less.

The *protensity* of sensations is connected with their duration. A sensation of sound which has lasted three seconds is felt as different from a sensation of sound which has lasted only one second. Protensity is a better term than duration. For duration would naturally stand for the actual time which a sensation lasts as measured by the clock. Protensity stands for the difference in our immediate experience of the sensation which is connected with its greater or less duration.

Extensity is another general character of at least certain important kinds of sensation. But it will be more convenient to notice this feature when we come to treat of the perception of extension.

Different Classes of Sensation. — Passing now to the enumeration and comparison of the different classes of sensation, we may begin with the following provisional list: Sensations of sight, of hearing, of contact and pressure; those due to the varying states of muscles, joints, and tendons as dependent on the position and movement of the limbs; sensations of smell, of taste, of temperature, and finally organic sensations. The last head requires some explanation. Under the term "organic sensation" are included sensations due to the state of the internal organs of the body, such as headache, thirst, muscular cramp, or fatigue, nausea, etc. Our general feeling of being well or ill is due to the whole mass of sensations arising from the general condition of the organism. Under organic sensations are also included such sensations as arise from a bruise, a blow, or a cut. These experiences are indeed initiated by agencies external to the organism. But they

may equally well be produced by very different external agencies, and they persist often for a long time, and may even increase in intensity after the external agency has ceased to operate. A wound persists after the knife has been withdrawn, and along with the wound the pain of it.

Qualitative Affinities of Sensation. — The classes of sensation which we have distinguished are marked off from each other by differences in the conditions of their origin and in the part which they play in our mental life. Besides this, some of them, such as those of sight, of hearing, of smell, and of touch, are so disparate in quality that we need not hesitate to rank them as radically distinct in kind. But between others more or less qualitative affinity is discernible. Experiences of heat and cold are ingredients of organic sensation. *E.g.* the cold thrill which runs down the back in certain emotional states, or the general glow produced by drinking a glass of brandy. There is also an unmistakable affinity between organic sensations in general and those of pressure. Indeed, the theory has been propounded that all organic sensations are resolvable into pressure and temperature experiences. This view may be accepted if we bear in mind that our organic experiences include very peculiar varieties of pressure-sensation. Hunger, thirst, fatigue, nausea, and toothache are not disparate from cutaneous sensations of contact, as they are from sensations of sound or color. But we cannot place them on the same level with such modifications of cutaneous pressure as roughness or smoothness.

Muscle, joint, and tendon sensations are clearly akin to those of pressure. The two groups of sensations are united in ordinary experience as if they belonged to the same sense. They are only distinguishable by an effort of

analysis. Indeed, until comparatively recent times, they were not formally distinguished, at all. Further, when they are distinguished it seems impossible to discover any difference of kind between them, such as marks off either from smells or sounds, or sounds from colors.

There is also qualitative affinity and intimate union between smells and tastes. What in ordinary language are called tastes are to a very large extent odors. An onion is mistaken for an apple when it is neither seen nor smelled, but only tasted. The only sensations of taste, strictly understood, are the sweet, bitter, salt, sour, and alkaline.

Higher and Lower Senses. — The various classes of sensation may be arranged in a scale proceeding from the higher to the lower. Organic sensation is at the bottom of the scale, hearing and sight at the top. Between these are interposed in ascending order, sensations of temperature, of taste, and smell, and tactual sensations, together with those due to the varying states of muscles, joints, and tendons. The relatively higher senses are more delicately discriminative than the lower. On the other hand, if we except hearing, they count for less as direct sources of pleasant or unpleasant feeling. In this respect, organic sensation is of altogether predominant importance. Even the pleasures and pains of the higher senses are very largely due to concomitant affections of our general organic sensibility. The depressing effect of the wind whistling down a chimney, the painful experience of having one's teeth set on edge by the scratching of a slate pencil, the faintness or nausea produced by certain odors, the enlivening influence of bright colors, are all in the main to be accounted for in this way.

Another most important ground of the distinction be-

tween higher and lower lies in the kind of combination into which the various classes of sense-experience enter. There are two ways in which sensations may combine, so as to form a unity. They may combine like the various ingredients which comprise the complex odor of a druggist's shop, or like the bitterness, sweetness, and aroma of a cup of coffee. On the other hand, they may combine as colors do when they bound each other in space so as to constitute definite outlines, shapes, or patterns. The first of these modes of union is called *fusion* or blending. The term *colligation* has been proposed for it; I prefer to call it *grouping* or *arrangement.*

Fusion is characterized by the absence of any definite *order* among the constituents of the sensation complex. If the constituents are *a*, *b*, *c*, the *a* is not otherwise related to *b* than it is to *c*, or than *b* is to *c*. It is true that the several components are in various ways similar or dissimilar in quality or intensity. But these relations do not depend on the fusion. There is only one relation due to the fusion — the relation of being fused. The sweetness, bitterness, and aroma of the coffee are blended in the experience of drinking it. But the blending of the sweetness and aroma is not a relation distinct in character from the blending of the sweetness and bitterness. The mode of union of any two sense-qualities of the blend is not itself a distinct presentation, having a positive character of its own. On the other hand, the meeting of adjacent colors does constitute a distinct presentation, — that of boundary or contour, which may vary in manifold ways according to circumstance. The meeting of a patch of red with surrounding gray is a definite shape, which may be square, triangular, or circular. The relation of the red to the gray is not that of the gray to the red. The red is within the

square, triangle, or circle; the gray is outside. Further, the mode of grouping is largely independent of the sense-qualities grouped. We might substitute gray for red and red for gray, and yet have a triangle of precisely the same shape.

Clearly, grouping is a kind of combination peculiarly characteristic of the higher senses. The eye, the ear, and the skin, together with muscle, joint, and tendon, constitute the organs of what may be called the *shape* senses; the others are, comparatively speaking, shapeless. Simultaneous grouping belongs, above all, to visual experience. In a much less degree it is found in experiences of cutaneous pressure. We feel the contours of objects pressing on the skin. But we do so vaguely, as we discern shape and outline in twilight vision when all is gray. Other sensations, such as the organic, and those of smell, taste, and hearing, exhibit very little simultaneous grouping. Smells occurring together are not grouped, but fused, and the same is, in the main, true of sounds. But sounds exhibit a remarkable development of successive grouping. The transitions between one sound and another have a definite and positive character comparable to the meeting of conterminous colors. A sequence of such transitions can combine in a unity analogous to that of the shapes presented to the eye. As in the case of the eye, so in that of the ear, the form of grouping is relatively independent of specific nature of the sense-material. A tune may remain the same in form although the pitch of every single note is changed, if the musical intervals between them are unaltered. Similarly with the rhythm of a line of verse. The sound of "Home they brought her warrior dead" is shaped like the sound of "Up they sprang and went away." The sound of "Smoking is not allowed in

the courts and grounds of the college" is shaped like that of a Latin hexameter. The only other sensations which exhibit successive grouping of similar definiteness and complexity are those which arise from muscles, joints, and tendons as they vary with movements of the body. Hence there is a formal affinity between the flow of sounds and the flow of these movement-sensations, which makes it possible for them to enter into peculiarly intimate union. When we speak there is a successive grouping not only of sounds uttered, but also, coincidently, of the sensations connected with the movements of articulation. Dancing to music is another good illustration.

CHAPTER VI

ATTENTION

Attention may be defined as interest determining cognitive process. When I am interested in an object, the satisfaction of my interest may depend partly or wholly on a fuller, more distinct or more prolonged presence of the object to cognitive consciousness. So far as this is the case the self-fulfilment of my interest is attention. In attending I do not ultimately seek or require any change in my object which does not consist in its becoming better known to me or more familiar to me.

Unity of Attention-process. — Can we attend to more than one thing at once? The question is ambiguous. It may mean: Can there be two separate and disconnected attention-processes within the stream of individual consciousness? The answer to this question is that such division of attention does not occur normally, though something like it is found in certain pathological cases. In the second place, the meaning may be: Can the same attention-process be simultaneously concerned with a plurality of different objects? The answer is: Yes, if the different objects are presented as partial features or aspects of some kind of whole, — if they are thought of as in some way connected with each other. Otherwise, we cannot either simultaneously or successively attend in the same attention-process to different objects. For the unity of the attention-process is unity of interest, and unity of interest exists

only in so far as we are and continue to be interested in the same object.

We may illustrate as follows: Suppose that I am counting a heap of stones, one by one. I am throughout interested in finding out how many there are, and this unity of interest constitutes the unity of the attention-process. I attend to each stone in turn. But I do not attend to each in isolation. I attend to each as being a unit in the sum-total. If I count the stones in groups of three instead of one by one, I may be said to be simultaneously attending to three different things. But I attend to them as forming a single numerical group, and to this group as forming part of the total number of stones.

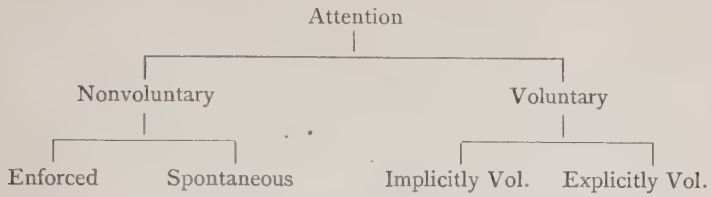
Ambiguity of the Term "Object of Attention." — In dealing with attention, it is always important to be clear as to the real nature of the object attended to. Ordinary language is often inexact or ambiguous in this respect. If, while I was counting the stones, some one asked me what I was attending to, I should probably reply, To this heap of stones. In all likelihood I should have given the same answer if I had been examining the stones from a geological point of view. Yet the object of attention is very different in the two cases. The markings and texture of the stones form an important part of the geological object. But they are nothing to me while I am merely interested in counting. In the "pursuit of a prey by a man or a beast," the total object of attention is not the mere animal pursued, but the "whole pursuit of the animal. And hence every detail in the scene which in any way bears on this pursuit, whether as contributing to it or as hindering it, is or may be included within the object attended to. Or, let us take the instance where a woman's

object in going to a party is in fact to promote the success of her daughter. We might say here naturally that her daughter was throughout the time the real object of her attention. But this way of speaking, if convenient, is not correct. Her true, 'real object' is the observing, the doing, and the preventing this and that thing in regard to her daughter — in a certain interest. And hence it is hard to say what detail in the scene may as condition or circumstance . . . fail to be included and be attention's total object." [1]

The Focus of Attention. — In the examples just given attention is successively engaged with the partial features, phases, and aspects of a single total object. At any stage in the process, some partial feature, phase, or aspect of the whole is relatively prominent and definite, the rest being only indeterminately apprehended. Now the feature or features which at any moment are thus specially emphatic and determinate, are said to be in the *focus* of attention. While I am counting the stones, my attention's object includes the whole heap as something to be numbered. But at any given stage, what is in the focus of attention is the particular stone I am taking into account at that moment and the particular number which is formed by adding it to the stones previously counted.

Various Kinds of Attention. — We may broadly distinguish two sorts of Attention, the Voluntary and the Nonvoluntary. In so far as an object excites interest on its own account, attention to it is called nonvoluntary. In so far as an object interests us merely as a means to an end, attention to it is voluntary. Nonvoluntary attention is either *enforced* or spontaneous. Voluntary attention is either explicitly or implicitly voluntary. Thus we have: —

[1] F. S. Bradley in *Mind*, N. S., No. 41, p. 23.



An example will help us to understand these distinctions. A student is working at a Greek play in order to pass an examination. Apart from such an ulterior end he would not be concerning himself with a Greek book at all. It is only or mainly because he intends if possible to pass the examination that he is attending to it at all. Hence his attention is said to be voluntary, as depending on a volition. It would really be better to call it volitional. For there is a sense in which it is involuntary rather than voluntary, inasmuch as the student is doing what he does not like. But the term "voluntary" is imposed on us by current usage.

As the student is pursuing his irksome task, the sound of a neighboring piano suddenly assails his ears; some one is playing scales. The noise forcibly challenges his attention, apart from any volition on his part. In other words, he attends nonvoluntarily. Further, his attention is enforced, not spontaneous. It is enforced by the abruptness, the intensity, and in general by the obtrusiveness of the sensation.

This interruption being over, the student again turns to his book. Shortly after, he hears some one speaking. The sound may be less loud than other sounds which he has failed to notice. It may be less loud than other simultaneous sounds. But it is the voice, let us say, of the woman he loves. Again he attends apart from any voli-

tion, perhaps even against his will. But attention is not, in this case, enforced by the obtrusiveness of a sense-impression, or any analogous condition. It follows from his natural bias and his preformed interests. In other words, it is spontaneous. The distinction between implicitly and explicitly voluntary attention still remains to be explained. Our student is attending to the Greek play in order to pass an examination. But it may be difficult for him to keep this end in view with sufficient steadiness and vividness. The contents of the book before him have no sort of intrinsic connection with the passing of an examination. Hence in fixing his thoughts on the book he is likely to lose sight of the examination and its significance. So far as this happens his attention will flag, because the derivative interest required to sustain it ceases to operate. The student then again thinks of the examination and pulls himself together, saying, "This won't do; I *will* pay attention to my book." Following out this express volition to attend, he turns his mind once more to his task. Here, Attention is explicitly voluntary because it follows on an express volition to attend. On the other hand his sense of the importance of the impending examination may have so strong a hold on him that such self-reminders are unnecessary. In that case he may go on attending without framing express volitions to attend. His attention is voluntary because he is not interested in his object except in reference to an ulterior end. But it is implicitly not explicitly so, because there is no express volition to attend.

In education, the teacher should, in the first place, aim at making voluntary attention implicit rather than explicit. Here the selection of ulterior motives for attending is important. The motives should have as much connection with the subject-matter of the lesson as possible. In the

second place the final aim ought to be to convert voluntary attention into spontaneous, by inducing direct instead of derivative interest in the subject-matter. Sometimes voluntary attention is called active, and nonvoluntary attention is called passive. These terms are appropriate; but their application must not be misunderstood. They do not refer to the intrinsic nature of the attention-process, but to the way in which it is initiated or maintained. The attention-process itself is always a mental activity, the self-fulfilment of an interest. When a sudden sound forcibly challenges my attention, I am so far passive. But the obtrusiveness of the sense-impression is not the process of attending; it is its antecedent condition. Attention is the subjective attitude of inquiry, asking, "What is this?" or simply "What?" In scholastic language it is an attempt to cognize "quiddity" or "whatness." That sensuous obtrusiveness is not itself attention is shown by the fact that when it is too great it may for a time destroy the possibility of attending. If the report of a cannon in my immediate neighborhood suddenly and unexpectedly assails my ear, I am for some time incapable of attending to it. I am incapable of inquiring into "whatness." The "what" is swallowed up in the "that." So in cases of intense and sudden pain, our experience for the moment simply *is* the painful sensation without the subjective reaction of attending. In cases of spontaneous attention, it is plain that we may be and often are mentally active in a very high degree. We can only be said to be passive in the sense that the attention-process is not initiated or kept going by a volition directed to an ulterior end. On the other hand in explicitly voluntary attention, we are often chiefly active in making ourselves attend. In actually attending, the mental activity may be comparatively faint and intermittent. Indeed,

that is precisely the reason why recurrent volitions to attend are required.

Inattention.

(1) *Total Inattention.* — When in ordinary language we say that a person is inattentive, we very rarely mean that he is not attending to anything at all. We usually refer to some special object which he might be expected to attend to, and we mean that he is not attending to this. We call a man inattentive if he does not listen to what we are saying to him. We by no means imply that he is not attending to anything else. In fact, absolute inattention is quite exceptional in normal waking life. As we have seen, it may be induced by the shock of a sudden and violent excitement. It also occurs in such states as that of going to sleep. Otherwise, in normal waking life, we seem always to be attending to something or other. Attention may ramble fitfully from object to object, touching each superficially and transiently. But it seems to be nearly always present in some form and degree. When no other interest comes into play, there is generally present the interest in occupying ourselves with something or other, — the interest which when it fails of satisfaction gives rise to the disagreeable experience of being bored, or being "at a loose end."

(2) *Relative Inattention.* — Though absolute inattention is thus rare, what may be called relative inattention is a constant feature of our mental life. Objects are constantly present to consciousness which are not attended to because the mind is otherwise occupied.

Such objects of inattention fall into two groups. (*a*) Those which do not enter into the constitution of the attention process at all. (*b*) Those which do directly con-

tribute to determine the attention-process, though they are not themselves attended to.

(*a*) Suppose that my mind is occupied in reading a book. I take no notice of the margin of the page before me, or of the candle flame in front of me, or of the surface of the table on which the book is placed, or of the clothes in contact with my skin, or of the sound of the clock which is ticking behind me. Yet some or all of these objects are in a manner present to consciousness. My total cognitive experience would be very different if I were reading my book in the open air, lying on the grass. But these objects, though present to consciousness, are not attended to. They belong to the outlying field of inattention. It is characteristic of them that they are in no way developed in consciousness. There is no successive presentation of their various features and aspects. They do not reproduce other presentations. They do not form part of a stream of thought or train of ideas. When we speak of the stream of consciousness we refer to attentive consciousness. The contents of the field of inattention remain fragmentary and motionless, or vary only with a change of external stimulation.

(*b*) The second class of objects of inattention consists of presentations which, without being themselves attended to, none the less directly determine the attention-process as coöperating factors. They are not attended to because they are uninteresting in their own intrinsic nature and existence. They determine the attention-process because they signify or suggest what is interesting. The use of words in speaking, hearing, reading, and writing forms a good illustration. We are for the most part not attentive to the words themselves, as articulate sounds or as printed or written characters. But we do attend to their meaning,

and as suggesting this meaning they are coöperating factors in the attention-process. Similarly, we are to a large extent inattentive to the varying magnitude and outline of the visible appearance of things seen at different distances and from varying points of view. But the optical sensation suggests the real size and magnitude, and to this we do attend.

Means of fixing Attention. — There are very many means which we are constantly using in order to help or facilitate attention to an object. Thus when the thing in which we are interested is present to the senses we adjust our sense-organs so as to procure from it relatively intense or finely differentiated sensation. We follow the outlines of the object with our eyes, bringing its parts successively within the area of distinct vision. We may actively touch or taste, or we may sniff the air for an odor. In very close attention to sensible objects the body is maintained in a tense and motionless posture. Even the movements of breathing are sometimes suspended. This fixed and motionless attitude facilitates attention by excluding disturbing influences which might otherwise interfere with it. It has been maintained that Attention simply consists in motor adjustments of the kind described. But such a view is quite untenable. The adjustment of the eyes for distant vision is no more essential to attention to the thing looked at than the adjustment of an opera glass. None the less these natural aids and instruments of attention are of great importance.

Effects of Attention. — The primary effect of attention is a more complete or more distinct cognition of its object, or at least increased familiarity with it. But its efficiency

in this respect does not depend merely on its own intensity. It depends on the nature of the object and on the amount of attention which this or similar objects have received in the past. An equal degree of attention will be more successful in deciphering the good writing of Jones than the bad writing of Smith. But after a long study of Smith's script I may be able to make it out almost as readily and fully as that of Jones.

Another effect sometimes ascribed to Attention is that of intensifying sensation. But this view is probably due to a confusion between intensity and clearness or distinctness. If, in attending, we intensify sensation at all, we do so only within narrow limits. Otherwise we should often defeat our own purpose by altering the very object which we are interested in knowing. If I want to know precisely how loud a sound is or how bright a color is, I attend to it. But this procedure would stultify itself if the very act of attending made the sound louder or the color brighter. As a matter of fact, we can follow with increasing attention the gradual fading away of a sound into silence.

There is, however, a sense in which Attention *strengthens* its object. *Ceteris paribus*, the more attention an object receives the more effective it becomes in recalling other presentations, and in otherwise determining the stream of thought and action. If I transiently and faintly note the presence of a book on my shelves, as I may in looking for another book, the presentation of it may have no appreciable influence on the subsequent course of my conscious life. But if I attend to it more keenly and persistently, it will call up other ideas, connected, perhaps, with its contents, or its author, or the circumstances under which I bought it. I shall probably take it out of the shelves, look at it, and perhaps begin to read passages in it.

CHAPTER VII

RETENTIVENESS, ASSOCIATION, AND REPRODUCTION

Attention and Retention. — Retentiveness is the most general name for the fact that prior experiences produce residual dispositions which determine subsequent experiences. In the present chapter, retentiveness will be considered especially in relation to the way in which it affects a recurrence of the same attention-process. By the same attention-process I mean renewed attention to the same total object.

The essential effect of attention is to make its object in some way better known. But its efficiency does not merely depend on its own intensity and duration. The nature of the object, as we have seen, is an important condition. You can make out the hand-writing of your friend Jones at a glance. But that of your friend Smith may not be clearly decipherable after prolonged and strenuous scrutiny. Efficiency also depends on the amount of previous attention given to the same or similar objects. After long familiarity you may become able to decipher Smith's manuscript without delay or difficulty. The strokes, curves, and dots are no longer chaotic. They are at once so discriminated and grouped as to form recognizable words and sentences. Similarly, the seaman discerns the "loom of the land," where a landsman can descry nothing but an indefinite haze above the horizon line. Helen Keller, who lost the senses of sight and

hearing in early infancy, can make out what a person is saying by feeling the motion of lips and throat. She can also recognize persons by the mere contact of their hands.

In all such cases the result of previous attention is retained and carried over into subsequent attention-processes having the same or a partially similar object. The work which has already been done does not need to be done over again. The residual disposition enables us to start afresh where we previously left off.

Retentiveness is also essential to an attention-process while it is actually taking place. Take, for example, the intelligent utterance of a sentence. If, at the end of the sentence, the conscious attitude of the speaker were not determined by the residual effect of his experience in uttering the previous words, his psychical state would be the same as if he had not spoken the sentence at all. Something like this occurs in certain pathological cases. In a case of senile decay, which came under my own observation, a lady went on reading the same nursery rhymes almost interminably, evidently finding them as novel as ever on each repetition. In order that mental advance may take place, the disposition left behind by previous psychical process must continuously persist as the basis and starting-point of further progress.

In the process by which dispositions are formed they also acquire certain connections with each other which are called "Associations." We shall here consider only such associations as are acquired in the course of the same attention-process. Other questions relating to this topic will be dealt with when we come to treat of "trains of ideas."

In attending, we successively focus various features, aspects, and phases of our total object. When on a sub-

sequent occasion we again notice some partial feature of the object, others emerge successively into the focus of attention. Such mental reinstatement is said to be due to association and the reinstatement itself is also called reproduction, revival, or recall. I have often attended to the letters of the alphabet in a certain order. The sight of the letters *A B C* now suggests to my mind the succeeding letters *D E F*. The letters *D E F* are said to be reproduced by association.

What is Association? — We must now determine more precisely what this term "Association" means. It is most important to bear in mind that it does not stand for any actual psychical process. Reproduction is an actual psychical process, but association is not. Association is an acquired connection of dispositions, and like the dispositions connected, it is formed in course of conscious experience, and it is a condition determining subsequent conscious experience. But as the dispositions themselves fall outside of conscious experience, so their union falls outside of conscious experience. Both the dispositions and their associations persist when we are sound asleep.[1]

I hear some one utter the words, "Sing a song of sixpence," and then stop short. Almost inevitably I recall the following words, "A pocketful of rye." What does this involve? I must have previously heard the words, "A pocketful of rye," and the previous hearing must have left behind it a disposition persisting through the interval of their absence from consciousness. There must also be a similarly persistent disposition left behind by a previous hearing of the words, "Sing a song of sixpence." Further, there must

[1] The union of presentations in consciousness, through which associations are generated, should be distinguished from the associations themselves.

be an acquired connection or union of these dispositions, and this union or connection must also have persisted in the interval during which my mind was occupied with other things. The two dispositions must have remained united in one complex disposition capable of being re-excited as a whole by a recurrence of only a part of the experiences which concurred to produce it.

And there is a corresponding physiological side to all this. The dispositions are physiological as well as psychical dispositions, and their union is a physiological as well as a mental fact. We may use the term "psycho-physical" as a name for the psychical and the physiological aspects taken conjointly. Association is an acquired psychophysical connection between psychophysical dispositions or between a psychophysical disposition and a purely physiological arrangement. This second alternative is very important. It includes all cases of what may be called "motor association." The sight of a word may prompt me to pronounce it, as in reading aloud. This is due to a previously acquired connection between the psychophysical disposition excited by the sight of the word and the special nervous and muscular arrangements for producing the movements of articulation. Motor associations are, as we shall see, of immense importance in our mental life — especially at the perceptual level. Learning to walk, to shoot, to fence, in general the acquirement of bodily aptitudes and dexterities, depends on the forming of appropriate motor associations.

How Associations are formed. — We have now to examine the conditions which determine the formation of associative connections during the course of a continuous attention-process. The main points to be considered are: (1) the

degree of unity which belongs to the process; (2) the nearness or remoteness in time of the presentations which successively emerge into the focus of attention; (3) the order of the successive presentations; (4) the frequency with which the attention-process is repeated.

(1) *The unity of the attention-process* depends on the unity of its total object. But this may vary very greatly in degree in different cases. There is a corresponding variation in the facility with which associations are formed and in their strength and persistence.

In trying to learn by heart a series of senseless syllables, the total object has a low degree of unity. The syllables are connected as being all articulate sounds and as forming a temporal series which is to be learned for a certain purpose. But their union is far looser than that of words combined in sentences so as to convey a connected meaning, and this unity becomes still more intimate if the words are arranged in rhythmic sequences, as in poetry. Professor Ebbinghaus found that on the average he had to repeat a series of thirty-six syllables fifty-five times in order to say them over from memory without an error. He required from six to seven repetitions in the case of each stanza of Schiller's translation of the "Æneid." Each stanza contains on the average fifty-six words or groups of words with a relatively independent sense. Deducting articles, prepositions, and pronouns, from thirty-six to forty independent words are left. Hence Ebbinghaus infers that his power of learning Schiller's verse is eight or nine times as great as his power of learning series of senseless syllables. A comparison between the number of syllables in the stanza of poetry and in the nonsense series is not practicable. For in learning intelligible sentences the mere number of syllables seems to make virtually no difference. A sen-

tence of twelve words of one syllable is learned in the same number of repetitions as a sentence of twelve words of two syllables.

Certain experiments on French school children are of interest here. The children had to write out after one hearing, sometimes a series of disconnected words, sometimes short sentences. Out of seven disconnected words they were able to reproduce only five on the average. Out of a sentence of thirty-eight words, divisible into seventeen groups with relatively independent meaning, they could reproduce fifteen such groups. Twenty-four such groups were reproduced out of a sentence containing twenty-eight, and consisting of seventy-eight words. In each case the parts retained were such as expressed the essential framework of meaning. Those omitted were in general more loosely connected with the unity of the whole: they consisted mainly of comparatively unessential amplification — ornamental epithets and the like.

This dropping out of insignificant links illustrates a general principle. *Ceteris paribus*, the most strongly associated dispositions correspond to those items which are most important to the general structure of the total object.

(2) This point is to be borne in mind in *considering the effect of proximity or contiguity*. According to the old view, which is still more or less current, the one indispensable condition for the formation of associative ties was simultaneity or immediate succession. This is certainly false. We are constantly doing what the school children did in the experiment referred to. In the process of recall we drop out details which are comparatively unimpressive or irrelevant to the dominant interest. The mind passes from one salient point to another, skipping over what is rela-

tively insignificant. If this were not so, it would take us the whole of to-day to recall the events of yesterday.

None the less, contiguity is a very important condition. Other things equal, a presentation will reproduce presentations which have occurred simultaneously with it or immediately subsequent to it, rather than others which were separated from it by an interval of time otherwise occupied. And it will reproduce those separate from it by a shorter interval rather than the more remote.

The importance of proximity is most conspicuous when the unity of the total object is loose, and when the successive items are approximately on the same level of interest. These conditions are fulfilled in the learning of series of unmeaning syllables. But even in this case, it has been indirectly demonstrated that associations are formed when the syllables are not immediately contiguous in time. The method followed is first to learn certain series so as to be able to repeat them without error and then to learn other series formed out of the first by regularly omitting every other syllable, or two syllables, or three syllables. Thus if we represent a primary series by the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, etc., the corresponding derivative series might be 1, 3, 5, 7, 9, etc., or 1, 4, 6, 10, etc. New syllables were intended to make the derivative series of the same length as the primary. The number of repetitions required to learn the derivative sequences was then compared with the number required to learn the primary. It was found that in every case the derivative sequences required fewer repetitions than the primary. The saving was greatest when only single links were omitted and diminished rapidly and progressively for the omission of 2, 3, or 4 links. Various precautions and tests were used which exclude any doubt that the greater facility in learning the deriva-

tive series was due to associations between items more or less remote from each other in the primary series.

(3) The next condition which we have to consider is the *order of presentation.* It is often asserted that association does not work backward, or in other words, that presentations are only reproduced in the order in which they have been originally attended to. Undoubtedly, this is the prevailing tendency, and it is particularly strong where there has been frequent repetition in the same order. Hence the great difficulty of saying the Lord's Prayer backwards. But we have here to do only with a predominant tendency and not with an absolute rule. It is shown by experimental evidence that when a series of nonsense syllables has been learnt by heart, a much fewer number of repetitions is needed to learn the same series in an inverted order. The backward working of association may also be of a more direct nature. A presentation may recall a prior link with which it is intimately connected, rather than a forward link with which it is more loosely connected. There is a neat illustration of this in certain experiments with nonsense syllables alternately accented and unaccented in a trochaic rhythm. After a series had been learnt so that the subject could just reproduce it without error, some minutes were allowed to elapse. The experimenter then presented isolated syllables to the subject and required him to name the first syllables which they suggested. When the syllable shown was accented it almost always reproduced the next following unaccented syllable of the next trochee. When it was unaccented it almost as frequently reproduced the previous accented syllable of the same trochee.

(4) *The effect of repetition* is well known, and it has already been incidentally illustrated. Its relative importance is greater as the interest is less intense and the

unity of the total object less intimate. It has been found that repetitions more or less immediately following one another yield less enduring associations than those which are separated by considerable intervals of time. In learning a series of nonsense syllables, associations are less firmly established by twenty-four consecutive repetitions than by four repetitions a day continued for twenty-six days. This division again yields a less favorable result than two repetitions a day continued for twelve days. The conditions of the experiment show that the results can only be accounted for if we suppose that older associations are more strengthened by repetition than those which have been more recently formed.

The Forms of Reproduction. — We now pass from the conditions under which associations are formed to their effects in conscious process. In other words, we have to consider the various forms of recall or reproduction. Of these we may distinguish four: (*a*) Free or explicit revival occurring directly. (*b*) Free or explicit reinstatement occurring indirectly through motor associations. (*c*) Nascent or implicit revival.

(*a*) In *free or explicit reproduction* the several items of previous experience emerge into consciousness with a mutual distinctness and independence, such as they possessed in their original occurrence. Where the revival is *direct* they take the form of mental images, copying actual sensations in their qualities and forms of combinations. In our previous illustration the words "A pocketful of rye" are recalled in this way. Each word is separately and successively heard by the mind's ear as it was originally by the bodily ear. Here the words are supposed to be merely mentally recalled by direct as-

sociation with the foregoing words, "Sing a song of sixpence."

(*b*) But another alternative is possible. Preformed association might lead me straightway to utter the words aloud without preliminary mental rehearsal. In that case there would be free or explicit reinstatement. But it would take place indirectly through movements depending on *motor* association; and it would take the form of sensations produced anew, not of reproduced mental images. This form of free reinstatement is peculiarly characteristic of perceptual process as distinguished from trains of ideas.

(*c*) If we are to account fully for the influence of past experience on present thought and action we must lay emphasis on another form of reproduction distinct both from revival, in the form of a sequence of ideal representations, and from reinstatement through motor activity following the lines of preformed motor associations. It is an all-pervading fact of our mental life that past experience also works in a way which may be called *implicit*. Without being itself recalled in distinct detail, it invests the details which actually are presented at the moment, with a certain relational significance, a sense of their meaning and bearings. For instance, as I am now writing, what is present to my attentive consciousness in the way of sensation or mental imagery may be only one or two words as seen or mentally heard and articulated; but these sensations and images have for me a meaning which is not itself formulated in sensations, in images, not even in other words; they have a relational import due to their preformed associations and to their place in the context of my discourse.

In general, the preacquired knowledge which determines our present thought is only to a relatively small

extent present to consciousness in distinguishable detail. To a far larger extent it is operative implicitly. We are, for instance, constantly proceeding on what are called unconscious assumptions — assumptions which often are not formulated in consciousness until they are falsified. We speak to a man on the assumption that he is capable of hearing, and we only wake up to the fact that we are making an assumption when he turns out to be deaf. I may meet a friend and begin to talk to him on some political topic, taking for granted that he agrees with me; I find that he does not, and only then does my implicit presupposition enter explicit consciousness. The fact that I am at present in Oxford and that it is vacation time colors my whole view of things and persistently determines my behavior and my trains of ideas; but I only rarely say to myself, "I am in Oxford and it is vacation time," or otherwise formulate these facts in consciousness. In signing a check I appreciate the significance of my act without calling to mind the successive details which constitute its significance, such as the presentation of the check by somebody, and the clerk paying out my money over the counter. Mr. Clay, the author of an unduly neglected book, "The Alternative," gives a very good example of an unconscious assumption. A waiter twice entered the room in which he was breakfasting by the same door and made his exit by another. Mr. Clay took what was in fact the same waiter for another, a twin brother. The general appearance of the building had led him to apprehend the room as having only one door; but he had never formulated the judgment, "There is only one door," or indeed mentally raised the question in any form.

Implied revival enters into all recognition of a whole

through some partial feature of it. Thus, when I hear the words "Sing a song of sixpence," they come before my consciousness as belonging to a certain familiar context. They do so at once, before I actually recall the following words, and each of these, as I am in the act of reproducing it, is recognized as only a fragment of the same specific whole. My total impression would be very different if I were repeating Gray's "Elegy." For this kind of recognition it is not even necessary to be able to revive further details beyond those initially presented. I may recognize the whole nursery rhyme when I hear its first words without being able to call to mind the continuation. The continuation as heard in the past is implicitly operative in determining recognition, though it cannot be reinstated in detail. In such a case I am generally able to reject wrong continuations, either occurring to myself or suggested by others, and immediately to identify the right one when it is presented to me. This is a typical case. In general, whatever is given in detailed experience is apprehended as a fragment of a wider group or system which is not presented in determinate detail. Suppose that I catch a glimpse of the back of a friend of mine as he is just disappearing round the corner of a street. What is explicitly presented as a sensuous datum is merely the fugitive and fragmentary view of my friend's back. This visual appearance is recognized, and I also at the same time recognize my friend by means of it. In part the recognition may consist in recalling mental images of his face or of the sound of his voice and the like. But before such detailed recall takes place, and also while it is in process of taking place, the object of the total experience has for me a distinctive peculiarity due to the resultant effect of previous experiences which are not at the moment present

to my mind in detail. This resultant effect would have been very different if I had seen in the same way an enemy, or a creditor likely to prove importunate, or an acquaintance in whom I took no particular interest, although these might have presented a similar appearance to the eye.

I give a last illustration used by Mr. Bosanquet in lecturing at Essex Hall. "If I say 'I have to catch a train at Sloane Square to go down to Essex Hall,' I only mention one train, one square, and one building. But my assertion shades off into innumerable facts which are necessary to make it intelligible and true. It implies the existence of the underground railway, which implies that of London. It implies the reality of this building and of the meetings which we hold in it, of the University Extension System, and of my own life and habits as enabling me to take part in the work of that system. Only a part of this is in the focus of my attention; but the whole is a continuous context, the parts of which are inseparable, and although I do not affirm the whole of it in so many words when I say that I am coming down here by train this evening, yet if any part of it was not presupposed, the rest would, so to speak, fall to pieces, *i.e.* would lose relations in the absence of which its meaning would be destroyed." [1]

Perceptual and Ideational Process. — The actual flow of mental life at all stages of development involves transition from implicit to relatively explicit reinstatement of past experience. We begin by apprehending a whole in its distinctionless totality, and then proceed to unfold its

[1] "Essentials of Logic," by B. Bosanquet, pp. 33–34. I have freely adapted the passage quoted by alterations and omissions, so as to suit it to my own purpose, which is not quite the same as Mr. Bosanquet's.

details. But this may take place in two fundamentally different ways. We may obtain anew a train of sensations by repeating a train of movements which has led to them in the past, or we may reproduce the distinct details of past experience by means of merely mental images. Thus, a man who knows his way about a building may make this knowledge explicit either (1) by actually making his way from one part of the building to other parts, or (2) by mentally picturing or describing in words the relative position of the rooms, passages, staircases, etc. The distinction between these two methods of translating the implicit into the relatively explicit roughly corresponds to the distinction between perceptual and ideational process; (1) is perceptual and (2) ideational. The nature of this distinction will be further explained in the next chapter.

CHAPTER VIII

DEVELOPMENT OF CHILD

In preceding chapters we have given some account of the general nature and conditions of conscious process. We now pass to the consideration of the successive stages of mental development. By way of introduction to this part of our subject, it is convenient to give some indication of the general course of mental development in the child.

Child's Development. — During the first year the child's mental progress consists almost wholly in acquiring motor associations by which he is enabled to adapt his movements in an increasingly purposeful and systematic way to the things and occurrences which affect his senses. He thus obtains a more and more extensive and effective control over the order and nature of his sense-experiences, seeking or avoiding them in advance, instead of passively receiving them as they happen to occur. It is through a kind of experimental process that this takes place. Movements of the body, limbs, and organs of sense are at first made at random, or comparatively at random. But there is a constant tendency to persist in those movements and motor attitudes which yield satisfactory experiences, and to renew them when similar conditions recur; on the other hand, those movements and attitudes which yield unsatisfactory experiences, tend to be discontinued at the time of their

occurrence and to be suppressed on subsequent similar occasions. By the working of this law of Subjective Selection, as it is called, relatively blind and undirected activities become gradually guided into definite tracks, each advance paving the way for further progress. It is to be noted that the continuance of an agreeable experience leads to satiety or fatigue, and so to change of behavior. Besides this, while the agreeable interest continues it may be enhanced by varying the motor activity in specific ways, without altering its general nature. Hence there is always present in some degree a subjective tendency to variation which yields material for subjective selection.

The child is, at the outset, mainly occupied in learning to see and touch. By constant practice in adjusting the movements of his eyes and hands, he obtains a gradually increasing command over the order of his visual and tactual sensation. There is, to begin with, a certain tendency, probably congenital, to turn the head, so as to bring into full view bright or obtrusively moving surfaces, and to stare at them. Let us suppose that the child is staring at a bright window and that the nurse turns him away from it. He begins to cry. If the nurse turns him toward the window again, he ceases crying and wears an appearance of contentment. But if he is not passively turned again so as to face the light, his discontent will continue and will manifest itself in restless movements of the head, eyes, and body. Among these movements one may occur which restores the previous pleasant experience. Turning his head far enough, in either direction, he sees again the light of the window. When this success, initially due to accident, has been repeated a certain number of times on similar occasions, the required movements will be made more readily, precisely, and decidedly, other movements

being cut short or suppressed altogether. The child in the nurse's arms, instead of merely kicking with his legs, and flapping his hands, will roll his eyes, not up and down, but to the left or right, until he catches sight of the window. A more complex development is reached when the child learns to turn, not his head, but his eyes, from one object to another and back again, gazing alternately at each. Miss Shinn gives a good instance. "On the twenty-fifth day, as the baby lay . . . in her grandmother's lap, staring at her face with an appearance of attention, . . . I leaned down close beside her, so as to bring my face into the line of vision. She turned her eyes to me with the same appearance of attention, even *effort* in slight tension of brows and lips; then back to her grandmother's face; again to mine; so, several times."[1] Here the eyes actively seek each object in turn in a purposeful and systematic way. At a later stage the child begins actively to look about in all directions in order to find what is to be seen. This attitude is well described by Miss Shinn. "In the fifth week, when held up against my shoulder, she would straighten up her head to see around, and thereafter looking about, *as if to see what she could see*, became more and more her habit."[2] In this way, a mastery is gradually acquired of that complex system of ocular movements by which the adult brings successively into distinct vision, by definite and orderly transitions, one object after another or different parts and aspects of the same object. There is a similar gradual progress in acquiring the power to follow a moving object with the eyes. In a very jerky and imperfect

[1] "University of California Studies," Vol. I, pl. I, *Notes on the Development of a Child*, by Millicent Washburn Shinn. Berkeley, 1893, p. 14.

[2] *Ibid.* p. 14. Miss Shinn's whole account of the development of sight and touch is excellent.

way, the child may do this within the first week, as a consequence of the tendency to turn towards bright surfaces. The bright surface draws the eye after it. Later on, moving objects are followed up in a more purposeful and systematic way, and also more continuously.[1] But at first the eye can keep pace only with slow and uniform motions of large or otherwise conspicuous objects. It is only by long practice that the child acquires the power of following motions which are relatively rapid or minute, or such as present complex variations in speed and direction. During this development of active sight, active touch also goes through a similar course of self-education, though this is at first of a much more limited and rudimentary character. The hand by tentative groping gradually learns the system of movements required for obtaining touch-sensations in definite order by contact with the various parts of the body and with other objects having a sufficiently constant situation within reach, *e.g.* face and clothes of the person holding it. The hand also learns to grasp what it touches. Clasping what is placed in the palm of the hand is a congenital, not an acquired movement. What has to be learned is the right use of thumb and fingers and the appropriate action for grasping things which touch other parts of the hand than the palm. At an early stage only those objects are seized which touch the fingers conveniently in front. Turning the hand so as to grasp what touches the back of it is a later development.

The education of sight and the education of touch may go on independently of each other for as long as three or four months. Afterwards a confluence of the two streams of development begins to take place. The hand is looked

[1] Never quite continuously. Even in adults the process is not quite continuous.

at as it moves and grasps with more and more attention. But at first it is only looked at as anything else might be looked at. It is only very gradually that the eye comes to guide the movements of the hand. At first the hand does not follow the eye, but only the eye the hand. Visual guidance becomes possible only as the child gradually learns the connection between varying positions of the visible appearance of the hand in the field of view and the touch-sensations of the hand itself together with the series of muscle, joint, and tendon sensations which accompany its movements. At first the visual guidance is exceedingly vague. Sight seems merely to give the suggestion that there is something somewhere to be grasped; but the actual finding of the object depends mainly on tentative groping. "About the 113th day" the baby studied by Miss Shinn "would not aim a grasp at the object under visual guidance, but would look at it, moving her hands vaguely, as if feeling for it, then strike them toward it with fingers open, till they touched and then grasped." Gradually sight comes to exercise more effective control, so that the tentative groping acquires decision and precision; at the same time, the position of fingers and thumb is prearranged for grasping before actual contact. Thus by a long process of experiment, leading through many transitional stages, the child becomes able to aim a grasp at any object within reach, readily and accurately.

As this process is going on there is also a gradual increase of skill in exploring and variously manipulating the things which are grasped. This opens out a multitude of fresh sources of interest and lines of experimental activity. The thing which the hand grasps may be explored in detail with the fingers and thumb; it may be held up and turned round for inspection by the eye; it may be set rolling; it

may be dropped or flung on the table or floor; it may be crushed or crumpled or torn or pulled to pieces. If it is hollow it may be filled or emptied. If it is elastic it may be made to rebound. The child in this phase of his development is often especially interested in fitting one thing into another, as a cork into a bottle or a key into a lock. He may also find a rich source of satisfaction in scribbling with a pencil.

We need only refer in passing to the acquirement of the various modes of locomotion, such as rolling, creeping, sitting, walking, running, and climbing. These motor adjustments develop in the same gradual way as grasping and manipulation. They develop by a gradual transition from relatively tentative, vacillating, and random motor activity to relatively decided, fixed, and orderly modes of behavior. Throughout, the experimental activity is prompted by interest agreeable or disagreeable. It is progressively moulded into shape by the gradual repression of movements which lead to unsatisfactory, and the retention and repetition of those which lead to satisfactory, results. The new experiences which emerge in these processes continually open out new sources of interest, leading to new lines of experiment. The results of past process form a basis for subsequent development.

The child's progress, so far as we have hitherto considered it, has been almost exclusively on the *Perceptual* level. It has involved only direct adjustments in the way of bodily movements to things and situations actually present to the senses. But as the child learns to speak and to understand what is said to it, another form of mental activity emerges, and gradually assumes more and more importance. In this mental images are substituted for actual sensation, and fulfil a function partly analogous,

though with most significant differences. Sights seen with the mind's eye take the place of sights seen with the bodily eye. Sounds heard with the mind's ear take the place of sounds heard with the bodily ear. Among these images are included mental revivals of words as heard and articulated. And words as actually spoken and heard fulfil an analogous function; for they are means of directing attention to objects which are not actually present to the senses. Both words and mental images have a meaning due to preformed associations working in the way of implicit revival. They are representations of objects. So considered they are called ideas, and the processes into which they enter are called ideational. The transition from perceptual to ideational process is gradual. Ideas probably occur at first in a sporadic way, and serve merely to supplement perception in guiding the course of motor activity as it is actually proceeding. As the ideational process becomes more independent of perceptual, lines of action begin to be planned, projected, or contrived in the way of ideal representation, before they are put in execution. There is clear evidence of this when the child in dealing with a certain situation utilizes experiences which have been acquired in different and disconnected circumstances. A little boy of twenty months has learned that he can make an organ grinder play by giving him a penny. The penny is usually supplied by his mother. But on one occasion his mother cannot find the coin and the organ grinder is walking away. The child exclaims, "Pem, pem" (penny, penny). He then goes to a little box containing various articles which he is in the habit of using as toys, and among these a penny. He finds the penny and brings it to give to the organ grinder. This is an ideal combination leading to action which could hardly have resulted from

that way of learning by experience which is characteristic of merely perceptual process; for he has never before taken a penny from the box to give to the organ grinder. The box and its contents have quite different and disconnected associations. The mental combination made by the child is one which has never occurred in its previous experience. The word "pem" directed his thoughts to the penny in the box, and he then ideally brings the thought of this penny to bear on the present situation.

As the child grows older, ideal anticipation of the future and ideal recall of the past largely take the place of direct adaptation to circumstances immediately present. A capacity thus arises for prearranging behavior in adaptation to conditions which have not yet occurred, and for mentally constructing ideal combinations corresponding to nothing which has actually been perceived. For a long time, such ideational process, like prior and concomitant perceptual process, takes to a large extent the form of play. It is to a very large extent exercised merely for its own intrinsic interest rather than for the attainment of ulterior ends. The imitative and dramatic plays of children mainly consist in ideal construction. The same holds good of the little romances which they invent for themselves. The child mentally experiments with his own ideas for his own amusement, as at an earlier stage he experiments in manipulating the objects which he grasps in his hands. He or she imagines a life history for the doll or tin soldier. The doll, for instance, is put to bed, made to sleep, fed, taken out in its perambulator, reproved and slapped when naughty, praised and petted when good. Such ideal construction becomes still more complex and self-sustaining in the boy's mimic battles with tin soldiers or in the girl's tea-parties for her doll, in which ordinary tea

has to be pounded into miniature tea. Such playful exercise prepares the way for the more serious work of ideal construction in the business of life. Through ideal construction, playful and serious, the child learns to connect the detached data of perception in a more or less systematic whole, as partial features of a single world. At the same time his interests cease to take the form of detached and transient impulses; immediate and particular ends become subordinated to more remote and general ends. Thus a more or less unified plan of life emerges. In the whole process ideational activity, like perceptual, is throughout a development of interest, and serves in its turn to open out new sources of interest, which again supply fresh motives for further activity.

Reviewing this slight sketch of the mental progress of the child, we note: (1) That it has two broadly distinguishable stages, the perceptual and the ideational. The first of these precedes the second and persists along with it. (2) That in both stages the cognitive side of our nature coöperates in the most intimate manner with what I have called "Interest," including under this head everything in the nature of striving, desiring, being pleased or the reverse, and all the varieties of emotional attitude. The whole process is one in which interest moves toward its own satisfaction; but this is possible only by finding out how to satisfy itself, — in other words, it is possible only through the development of cognition.

Imitation. — Towards the end of the first year imitation begins to play a conspicuous part in the child's development. Subsequently it becomes a factor of very great importance.

The term "imitation" is, however, ambiguous. There are two forms of imitative activity which must be carefully

distinguished. One of these, *deliberate* imitation, is distinctive of ideational process. The other, spontaneous imitation, is found also at the perceptual level, though it becomes more varied and complex as the flow of ideas becomes more varied and complex.

Deliberate imitation essentially involves an ideal combination. The subject starts with the idea of a certain end to be attained. Some one else is seen to attain this end by a certain action. This action is then ideally represented as a means of attaining the end, and it is performed for the sake of the end, not for its own sake. A child, let us say, is trying in vain to open a drawer in order to get toys or sweetmeats which the drawer contains. I show him how to open the drawer by turning a key, closing and locking it again. He then attempts to turn the key himself. So far as he does this merely as a means of opening the drawer and getting the toys or sweetmeats, the imitation is deliberate, not spontaneous.

In the spontaneous form of imitation, the subject attempts to repeat some one else's action, simply because he finds it intrinsically attractive or impressive, and not for the attainment of any ulterior end. At that stage in the child's development in which he is keenly interested in manipulating objects, the sight of my turning the key would be likely to attract his attention vividly, apart from any reference to an ulterior result. He would then tend to imitate the action spontaneously, and not as a means to an end. This spontaneous imitation does not necessarily involve ideas. The mere perception of your beating the table with your hands or shaking your head is enough to prompt the child of about twelve months to beat the table with his own hands or shake his own head.

It is this spontaneous imitation which dominates the

dramatic play of children. They are interested in the doings of their elders directly, and imitate them from this motive, and not as a means to any further end.

Both spontaneous and deliberate imitation presuppose a motor association between the perception or idea of the act to be imitated and more or less similar movements which the child has already learned to perform. Hence the more he has already learned to do, the more he can do in the way of imitation, and the less he has already learned to do, the less he can do in the way of imitation. At the outset the child's imitative actions tend rather to resemble his own previous performances than his model. But the model has a modifying influence which becomes more and more marked in course of time. The child has not only learned certain particular movements, he has also learned to vary his movement in certain general ways, and he may thus make a particular variation in response to the model, which he has not made before. He has learned, for instance, how to stretch out his arm with varying degrees of force and rapidity. He sees you stretch out your arm very rapidly and forcibly, and in imitating you he may stretch out his own arm more rapidly and forcibly than he ever did before. He may also be led to combine and coadjust movements in the process of imitating, as he has never previously combined and coadjusted them. Thus he is able to imitate, for the first time, the action of his nurse in throwing a ball, only because he has already learned to hold things in his hand, to let them drop, and to stretch out his arm more or less forcibly. But the combination of first grasping the ball, then stretching out his arm forcibly and rapidly, then letting the ball go, is new to him. Even if he is successful in so combining his movements, his action may repeat only very imperfectly that

of his nurse. But accidental variations may occur which assimilate his behavior more closely to his model, and these variations will tend to be maintained and repeated by subjective selection. The deliberate and persistent endeavor to correct deviations from the model by reiterated trial involves ideational process. It depends on comparison and contrast between the result of the imitative process and that which was to be imitated. The idea of a successful imitation is set before the mind as an end to be attained, and the actual attempts to copy the model are regarded as means. To this extent the imitative process becomes deliberate even when its primary motive is the intrinsic interest of the action imitated.

CHAPTER IX

PERCEPTION OF EXTERNAL OBJECTS AND OF THE SELF

The external world as a more or less systematic whole becomes known to us by a process of ideal construction, which will be dealt with later on. But this ideal construction has for its basis and presupposition a perceptual cognition of external objects, and it is with this that we are at present concerned. Our problem has two aspects. An external thing is extended in space, and spatially related to the body of the percipient and to other extended things. Thus an essential part of our task will consist in giving some account of the perception of spatial relations. But besides their spatial character, external objects have for us a peculiar kind of independence. They exist, persist, and change independently of us and of the vicissitudes of our experience, just as we exist, persist, and change independently of them. We have to investigate the mode in which we come to cognize spatially extended objects as possessing this independent reality. Actually, the cognition of spatial relations and of external reality develop together in the most intimate union; they develop in and through the same concrete experiences. But for purposes of exposition it is convenient to deal with them separately. We shall begin with spatial perception.

Spatial Perception. — Position, distance, direction, and betweenness are spatial relations, and their systematic con-

nection constitutes spatial order. But these relations are by no means merely spatial. They are essential to every form of ordered series. In the series of whole numbers 6 has a position between 8 and 4, and it is at an equal distance from each of them in opposite directions. All mathematical progressions illustrate the same point. In a series of tones arranged according to their pitch, the direction from higher to lower is opposed to that from lower to higher, each tone has a certain position between others, and each is more or less remote from others according as more or fewer tones intervene between it and them. All temporal succession exhibits the same relations. There are distance and direction in time as well as in space, and each successive phase of a temporal sequence has a definite position between what comes before and what comes after. The same relational character is also found in the consecutive steps of a train of reasoning and in the transition from the more to the less general in a system of classification. The relations of position, distance, and direction have in each of these instances distinctive peculiarities determined by the respective kinds of material in which they are exemplified. It is not otherwise with spatial order. Here also there is a specific kind of material content which in most complex ways is connected in these relations. This material content is supplied by a character especially belonging to tactual and visual presentations, though it is shared also by organic, and possibly in a rudimentary way by other sensations. *Extensity* is a convenient name for this constituent of our experience of extension. Everybody, says Dr. Ward, knows what extensity is "who knows the difference between the ache of a big bruise and the ache of a little one," or "between total and partial immersion in a bath." The experiences of being

totally and partially immersed in a bath differ as regards the *quantity* of resulting sensation. But this difference is not merely one of intensity; it is also one of massiveness or voluminousness. In other words, it is a difference in extensity. The nature of extensity is best illustrated by experiences which differ from the fully developed perception of spatial extension only in the comparative absence of spatial order. Organic sensations, such as those of hunger, thirst, repletion, fatigue, and repose after fatigue, contain at the most very rudimentary internal distinctions of direction, distance, and position. But they are felt as more or less diffused. Professor James speaks of "the vast discomfort of a colic or a lumbago." Presentations in the extreme margin of the field of view have a peculiar vagueness differing in its nature from that of objects seen through a fog or in a bad light. This vagueness consists in the comparative absence of a definitely discernible order of positions, distances, and directions; in particular, it is worth noticing that the field of view as a whole is shapeless at its boundary. In the case of touch, the two points of a pair of compasses separated by a quarter of an inch and applied to the lips yield the perception of two discriminated contacts, with a discernible position, distance, and direction relatively to each other. But when they are applied to the forehead there is no discernment of two contacts; there is merely a vaguely extensive touch-sensation without inner distinction of position, distance, and direction.

We can no more account psychologically for the extensity of visual and tactual sensations than for their intensity and quality. Extensity is a primary datum with which we must start in treating of the development of spatial perception. On the other hand, the cognition of spatial

order becomes progressively more definite and articulate by processes which the psychologist can trace. Yet we do not pretend to take our point of departure at a stage in which the apprehension of anything which can be called spatial relation is entirely absent. The process is rather to be regarded as a gradual transition from relatively indistinct to relatively distinct perception. From the outset a certain relational character belongs to the perception of extensity. For extensity at least involves the continuous connection of parts within a whole. But there is a wide interval between this relational character of extensity as it is initially apprehended and our developed apprehension of a systematic spatial order of definite positions, distances, and directions. Apart from other evidence, the study of the development of young children leaves no doubt on this point.

We have said that extensity is a continuous whole. We must now indicate more precisely by what kind of difference its parts are differentiated. The difference is that which differentiates sensations due to the stimulation of one part of the sensitive surface of the skin or retina from those due to the stimulation of other locally distinct parts. Without the help of sight, we can distinguish contact with the big toe from contact otherwise of an exactly similar character with the nape of the neck, or the finger tip. It is only through a complex process that we learn to localize the different contacts in the toe, neck, or finger tip. But this process and its results are only possible on the basis of original differences in the tactual experiences, which come to be localized. Similarly with the eye. We can distinguish a patch of white in the left margin of the field of view from an otherwise similar patch of white in the right margin. The distinction of

left and right is acquired. But it presupposes an original difference in the visual experiences directly connected with the local distinctness of the parts of the retina stimulated by the light from the two white objects.

Such differences are called differences of local sign. They seem to be quite independent of the quality and intensity of the visual and tactual sensations as determined by the variable nature of the stimulus or changing state of the sense-organ. Amid all the variations of our tactual and visual experience, the local systems of the eye and of the skin remain permanent and constant. The same local sign may become successively (never simultaneously) connected with sensations of different quality or intensity; a sensation otherwise similar may successively acquire different local signs; but the local signs themselves are unchanging.

The perception of spatial order is primarily the perception of position, distance, and direction within a system of local signs. The experiences which most contribute to this result are those in which a sensation continuously changes its local sign. This happens, for example, when a fly crawls across the face or passes through the field of view. In such cases the different local signatures are acquired by the sensation in a definite serial order. As a fly creeps from the bridge of the nose to the tip, it must pass successively over intermediate parts of the sensitive surface. Hence, there is a determinate order in which the sensation of clammy contact changes its local sign. Similarly, when a white object passes across the field of view from right to left, locally distinct parts of the retina are successively stimulated in a definite sequence; and a correspondingly definite sequence belongs to the continuous change of local sign in the sensation of white. Learn-

ing to perceive spatial relations primarily consists in learning the order in which the local sign system is traversed by sensations which continuously change their local signature. With reference to the sensations themselves, this order is one of succession in time; it is an order of motion. With reference to the fixed and constant local sign system, it is a spatial order of positions, distances, and directions.

The experiences of active sight play an altogether predominant part in the actual development of spatial perception. The processes, described in the last chapter, by which the child learns to command the occurrence of visual and tactual impressions in a definite order, are also the processes by which he learns to apprehend spatial position, distance, and direction. In learning how to bring a visual presentation from the dim margin of the field of view into the area of distinct vision, he learns the ordered series of changes in local sign which the visual presentation undergoes before it becomes distinct. When he follows a moving object with the eye, he finds that the other parts of the field of view continually change their local signature in definite order, varying with the experience of ocular movement. So far as the eyes fail to follow the moving object, this also, or this alone, changes its local sign. When the moving object is our own hand or some other mobile part of our own body, we can control these local sign changes at will. We learn to do so by such processes as have been described in showing how the child learns to grasp and manipulate under visual guidance.

In all these experiences, so far as they involve movements of the eyes, hands, or other parts of the body, local sign changes are accompanied by corresponding

sequences of sensation due to the varying states of muscles, joints, and tendons. These help to define spatial position, distance, and direction; and in doing so they themselves acquire spatial significance. Each special group of muscle-joint-tendon sensation connected with a certain position of a limb comes through association to represent this position, and each kinæsthetic series comes to represent a tract of space traversed. Thus, without actually seeing our hand, we can distinguish its varying position relatively to the rest of the body; we know whether it is stretched out in front of us, or hanging by our side, or held above our head. Similarly, the kinæsthetic series which accompanies the transition from one of these postures to another, immediately conveys to the mind the perception of a motion in space from one position to another, such as might have been observed by the eye. In this way our perception of spatial relations receives a most important development. For we are constantly moving our eyes, bodies, and limbs in varying ways, and these movements yield a corresponding varying perception of distance and direction in space.

Perception of External Reality. — External objects are visible, tangible, audible, and otherwise appreciable by the senses. Yet they do not merely consist in actual sensations of ours. They with their tangible, visible, and other sensible qualities are apprehended as existing, persisting, and changing, independently of the flow of our transient sense-experiences. They and their sensible qualities are cognized as existing independently of us, just as we exist independently of them. How do we become aware of this independent reality?

In the first place, it is only through the analogy of our own being that we are enabled to become cognizant of

other beings having an independent existence such as we ourselves have. Thus the perception of external reality essentially involves what has been called the "projection of the self." But when this is admitted, there still remain two questions to be answered: (1) What are the motives and conditions of this self-projection? (2) How do the independent beings which it leads us to posit become invested by us with attributes derived from the content of our own sensation, so that they appear as material things and not merely or mainly as other minds? These two questions find their answer in the facts of motor adaptation — in the way in which our motor activity is conditioned in the attainment of its ends. The projection of the self and motor adaptation are then the two factors which give rise to the perception of the independent reality of material things. We have first to consider motor adaptation.

Motor Adaptation. — We must take care to distinguish our own point of view from that of the individual whose experience we are investigating. We know that there is an independently real external world, and we know that the body of the individual we are considering is part of it. But we must avoid assuming at the outset that he himself possesses this knowledge. Our problem is to show how he gains it.

Owing to the peculiar connexion of psychical and bodily processes, he has a relatively direct and unconditional control over certain sense-experiences. Given the appropriate motor associations or instinctive equipment, he can command at will the various series of kinæsthetic sensations connected with the unimpeded movements of his organism. This does not imply that he is aware of his own organism and its movements as independently real; it means only

that he obtains certain groups and series of muscle-joint-tendon sensation whenever he is interested in having them. But this is not all: he has a similar command over certain other experiences which are not kinæsthetic, and in particular over certain visual presentations. This is not quite so unconditional. It depends on his having his eyes open, and looking in the right direction. In moving his hand in a certain way, he has immediately and invariably a certain sequence of kinæsthetic sensations. But if he is looking in the right direction, there is also a concomitant and correspondent displacement of the visual presentation of the hand in the field of view, and this may be followed by movements of the eyes.

Now so far as the subject has this habitual and uniform control over the course of his own sensations, he has no motive for recognizing the independent reality of external objects. This may be inferred from the analogous facts in our own case. Those experiences which are fully and uniformly under our own command are not distinguished from our own doings, — our own subjective activity. We do not usually distinguish between what our hand does and what we do ourselves. When I speak of myself as handling a knife, the knife is regarded as an external object, but the handling is regarded as part of my own action. This is because the movements of the hand are fully under my control. If it were suddenly paralyzed, it would at once become an external object to me. Similarly, in writing, so long as the pen does not splutter or make blots, or otherwise manifest its independence, I think of its movements as an integral part of my own action — the action called writing. Again, in riding a bicycle, so long as the machine is completely under command, I regard its behavior as my own behavior. I say that *I* go

down a street or turn a corner; I do not say that the bicycle does so. On the other hand, if it gets out of my control, it at once becomes an external object. We may then assume that so far as kinæsthetic and other sensations occur uniformly and directly whenever the subject is interested in having them, no distinction is made between his own activity and these, its habitual consequences. Conative consciousness and its fulfilment are blended into a unity; and this complex experience is what we call the experience of motor activity.

Experiences, then, which are fully and constantly within our control do not of themselves lead to the recognition of an external reality. The same is broadly true of experiences which are in the main unaffected by our free motor activity, *e.g.* the organic sensations of hunger, thirst, or headache. When the distinction between self and external thing begins to emerge, these organic experiences are primarily referred to the self rather than the not-self.

It thus appears that the cognition of external reality does not arise in connection either (*a*) with sensations which are fully subject to motor control or (*b*) quite beyond it. What is required is (*c*) a motor command of the flow of sense-experience which has to be acquired by a process of adjustment to conditions which are themselves uncontrollable. This is what I have called *motor adaptation*. It is present wherever we have to find out by trial the motor activity requisite for getting certain sense-presentations in a certain order. Motor adaptation in a definite form begins in the young child at the latest with processes of learning to see and to touch. He finds by trial the varying trains of motor activity required in varying situations for obtaining correspondent trains of distinct visual sensations. He has to learn how to find his way about in

the field of view. Similarly, he has to learn by a gradual process of trial and error the motor activity required for grasping objects in varying positions and at varying distances.

Motor adaptation involves at once and in intimate union the partial dependence and the partial independence of sense-experience in relation to motor control. So far as sense-experience is merely dependent on our motor activity, we do not apprehend it as qualifying an external object. So far as it is relatively independent, we do normally apprehend it as qualifying an external object. If I begin to look in a certain direction and then alternately open and close my eyes, a certain visual presentation may alternately appear and disappear. The occurrence of the successive appearances and disappearances depends merely on me. In the given situation, it is conditioned merely by the alternate opening and closing of my eyes. I do not therefore regard it as a change to the external object.[1] I do not suppose that the thing seen alters its position or otherwise. On the other hand, the fact that when I open my eyes it is just this visual presentation which appears and that when I close them it is just this which disappears, is not dependent on my own motor activity. The same motor activity might have been concomitant with the coming and going of a different visual experience. Hence I apprehend the visual experience as qualifying an external object which is alternately seen and not seen.

The forms of motor adaptation are endlessly diverse. But there is one in particular which demands special discussion because of its predominant importance. I refer to

[1] It must be remembered that we have not yet explained how the thought of an external object comes to be framed at all. This will be dealt with later on in discussing projection of the self.

that which arises in connection with the experience of resisted motor effort. The kinæsthetic and other experiences connected with the free movement of our body and limbs are normally within our full control. We can have them when we are interested in having them. Now, let us suppose that the moving hand, for example, encounters an obstacle which it cannot at once overcome. The subject then experiences the interruption of a certain kinæsthetic series; this series fails of its customary continuation. If the eye is following the hand, there is corresponding interruption of the customary series of visual experiences which accompany free movement; at the point where the visual presentation of the hand becomes continuous with the visual presentation of the object, it ceases to change its position in the field of view. Coincidently, there supervenes a complex of sensation due to muscular tension and tactual pressure. In such situations motor adaptation is required for the satisfaction of practical and theoretical interests. The subject must find out by trial how to adjust and readjust his motor activity in infinitely various ways in accordance with varying circumstances. When the moving hand encounters an obstacle, the subject may be interested in continuing the train of experiences which has been broken short, so that its interruption is felt as a constraint. In this case he can only find satisfaction by motor adaptation taking the form of increased effort, — increased innervation of the muscles intensifying the sensations of pressure and tension. How much exertion may be required is determined for him and not by him; in the first instance he must find this by trial. Again, it is determined for him and not by him, whether the increased exertion has to be continuously maintained, as in lifting a weight, or whether a momentary effort is enough, as it may be in pushing

open a difficult door. The requisite adaptations have, in the first instance, to be found out by trial, though the subject gradually learns by experience how to adjust his behavior at once in circumstances sufficiently similar. With the widening of experience and the development of more and more complex and special interests, this kind of motor adaptation becomes correspondingly diversified and complex. It includes all the various modes of manipulation, — all pulling, pressing, rending, tearing, joining, disjoining, breaking, bending, crushing, moulding, stretching, and the like, and all the various simultaneous combinations and coadjustments of these processes. In all such activities what lies directly within the power of the subject is to make efforts varying in intensity and direction and in varying combinations. The result does not depend on him. It depends on conditions to which he must adapt himself if he is to be successful. The required adaptation need not consist in overcoming resistance by effort. To a large extent it consists in avoiding or evading the experience of muscular tension. This is the case, for example, in placing the apex on a house of cards, or in exploring a surface so as to ascertain its shape or find something on it. In exploring a surface we have to keep continuously in contact with it, but any attempt to push against it so as to overcome resistance would hinder rather than help our special interest. Yet motor adjustment is involved; we move so as to obtain a certain continuous series of touch-sensations, and in so doing we must conform to the conditions imposed by the shape of the surface explored. A flat surface and a spherical surface demand different trains of movement.

Projection of the Self. — It is in and through the process of motor adaptation that we apprehend the contents of our sense-experience as qualities entering into the

constitution of external things. But this presupposes that the external thing does not consist for us merely in the sensible features by which it is qualified. There must be something to which these sensory contents are referred as attributes. Until we have shown how the thought of this something is framed we have not completed our task; we have not shown how features of sense-experience can be apprehended as expressing the nature of a not-self, capable of existing, persisting, and changing independently of the self and its fluctuating states. This deficiency is supplied by the other factor which we have named together with motor adaptation as involved in the perception of external reality. It is supplied by the projection of the self. The not-self which forms the indispensable nucleus or inner being of the external object is apprehended as in some degree a counterpart of our own subjective existence, and in particular as exercising a motor activity and as having a continuous existence more or less like our own.

The general condition on which self-projection depends is that sensible changes initiated and controlled by our motor activity resemble in character and are continuously connected with those which take place independently of us. Hence we come by the working of association to regard the independently occurring changes as connected in like manner with another motor activity, and in general with something more or less akin to our own psychical life.

For example, the visual presentation of our own body and its movements is like in nature to visual presentations of surrounding things, and forms part of the same continuous field of view. When I move my hand the motor adaptations by which I follow the movement with my eye are such as would be required in following the movement of another man's hand or of an inanimate object. But in the case of

my own hand the visible changes are initiated and maintained by my own motor activity; hence I tend to regard similar visual appearances when they are not initiated and maintained by me as being initiated and maintained by motor activity other than my own. It seems to me to flow from what in popular parlance is called a "force" or "energy." This "force" or "energy" forms no part of the sensible appearance. It is rather an interpretation of the sensible appearance in terms of the percipient's own subjective life.

In like manner the experience of resisted effort is interpreted as implying something which exerts a counter effort. This will be best understood if we consider first the case in which our own motor activity is directed against itself, as when each hand presses or pulls in opposition to the other. Here there are two distinct experiences of pressure and tension which we may call *tr* and *tl* as connected with the right and left hands respectively. There are also two distinct kinæsthetic series which may fail of the continuation they would each receive in unobstructed movement; these we may call *kr* and *kl*. Let us suppose that effort and counter effort (*tr* and *tl*) are at first evenly balanced so that neither hand moves; then both *kr* and *kl* remain undeveloped, and the visual presentation of the hands retains the same unaltered position in the field of view. If *tr* and *tl* are increased simultaneously and equally, no further change results. But if *tr* is relatively increased or *tl* relatively decreased, then *kr* is continued, and at the same time there is a corresponding displacement of the visual appearance of the hands in the field of view. Even then, however, so long as *tl* is in any degree maintained, both the kinæsthetic and the visual series proceed more slowly than they would do otherwise, and they only proceed at all while *tr* is maintained in the requisite intensity. If we compare the expe-

rience as we have described with such processes as lifting a weight or pushing a bicycle up a steep hill, we shall find an essential analogy in all respects but one. In the second class of cases we experience only one effort and one kinæsthetic series; that something is making a counter effort is not directly experienced, but suggested by association. This something is not in itself an external object, but rather the nucleus of one. It becomes an external object by being invested with sensible qualities. We refer to it as its attributes or expressions of its nature those contents of our sense-experiences which occur, persist, and change in relative independence of our own motor activity, — those contents to which we have to adjust ourselves in the way of motor adaptation.

The process of self-projection may have manifold degrees. In more rudimentary stages of mental development it is far more indiscriminate than in the more advanced. The savage is ready to treat trees, plants, rocks, rivers, and all kinds of inanimate things, as willing, feeling, and thinking more or less as he himself does. The civilized adult draws a sharp line of demarcation between animal life on the one hand and vegetable life and inanimate things on the other. He allows free play to self-projection only in the case of other human beings. None the less, the anthropomorphic tendency in an attenuated form still interpenetrates our own view of the world.

"We smile at the savage who thinks a magnet must need food, and is puzzled that the horses in a picture remain forever still; but few consider that underlying all common-sense thinking there lurks the same natural precipitancy. We attribute to extended things a unity which we know only as the unity of an unextended subject; we attribute to changes among these extended things what we know only

when we act and suffer ourselves; and we attribute further, both to them and their changes, a striving for ends which we know only because we feel. In asking what they are, how they act, and why they are thus and thus, we assimilate them to ourselves, in spite of the differences which lead us by and by to see a gulf between mind and matter. Such instinctive analogies have, like other analogies, to be confirmed, refuted, or modified by further knowledge, *i.e.* by the very insight into things which these analogies have themselves made possible. That in their first form they were mythical, and that they could never have been at all unless originated in this way, are considerations that make no difference to their validity, — assuming, that is, that they admit, now or hereafter, of a logical transformation which renders them objectively valid." [1]

The Embodied Self. — What is included in the consciousness of self at the perceptual level? It embraces, of course, the strictly subjective states of pleasure and pain and the various kinds of emotion; it embraces all sensuous appetites and all other forms of conation which occur at this stage of mental development; it also embraces the process of cognition, the process in which various objects in turn come to be perceived and cease to be perceived. All these items enter into the perceptual consciousness of self, though they are not discriminated from each other and separately noticed in their distinctness. But the perceptual consciousness of self includes far more than this: it comprises the body, — the skin and what is contained within the skin. The body in some

[1] J. Ward. Article on "Psychology" in the Encyclopædia Britannica, pp. 81, 82.

essential respects is just like other external objects. None the less, the experiences connected with it are so intimately blended with subjective process that discrimination between them would require an effort of analytic thought quite impossible on the perceptual plane. Indeed, we do not ordinarily make the distinction ourselves in a clear and consistent way. When a man says, "I am going to London," or, "I was knocked down," evidently body and mind are included in one indiscriminate whole.

Bodily experience and subjective process blend with each other in manifold ways. The connecting link lies mainly in those sensations which are directly due to the state of the body itself independently of external impressions. Under this head are included sensations due to muscles, joints, and tendons at rest or in movement, the continuous mass of cutaneous sensations of touch and temperature which is constantly present independently of contact with external things or one part of the body with another, and finally organic sensations proper, such as hunger and thirst. Organic sensations are on the one hand fused with sensuous appetites and pleasures and pains, and on the other they form a continuous unity with the total complex of sense-experiences through which our body is perceived. Emotions again coalesce with organic and kinæsthetic and other internally initiated sensations, *e.g.* those of hot tinglings, cold shivering, shallow or deep breathing, quickened heart beat, goose-flesh, tense or slackened muscles, and the like. We have already shown how conative consciousness blends with kinæsthetic sensation and with visible and tangible presentation of the moving limb, in the single experience of free motor activity.

The process of cognizing external things is bound up with the changing spatial relation between them and the presen-

tation of the body; in order to be perceived they must come or be brought within range of the organs of sense. To be seen a thing must either of itself enter the field of view or the open eyes must be turned toward it. For pressure and muscular tension actual contact is required, and this is presented to sight as visible contiguity. The pleasures and pains of sense, which are not merely due to internal bodily states, are similarly conditioned; in their more emphatic forms they are connected with actual contact between an external thing and the organism, followed by a perceptible change localized in the part of the sensitive surface affected, *e.g.* a bruise or a cut.

Owing to such conditions as these there is a spatial demarcation between the self and the not-self. The skin and what lies inside it is apprehended as belonging to the self; what lies outside it is apprehended as not-self. The distinction corresponds roughly with that between single and double contact-sensations. When we touch our own bodies there is the resulting experience including sensations due to the stimulation of both the sensitive surfaces in contact with each other. Each surface both touches and is touched. When we touch things outside the body one-half of this experience is absent.

CHAPTER X

IDEA AND IMAGE

Ideational Process. — The transition from perceptual process to trains of ideal representation is one of immense importance. The grand contrast between the achievements of man and the achievements of animals depends on the incomparably greater development of *ideational* process in human beings, in connection with the use of language, which is at once a consequence of this development and its most important instrument. *Ideas* as compared with *percepts* possess a peculiar plasticity. Ideal representations are to begin with reproductions of percepts. But they are capable of combining with each other, and of being variously modified so as to give rise to new ideal constructions such as have never been presented in perceptual experience. A young child cannot by any adaptation of his sense-organs, or by any kind of manipulation, transform a stick into a horse; but he can imagine the stick to be a horse, and enjoy an imaginary gallop astride of it. But this plasticity does not merely lend itself to playful flights of fancy. It is of the highest practical importance. When ideas "are sufficiently self-sustaining to form trains that are not wholly shaped by the circumstances of the present, entirely new possibilities of action are opened up. We can desire to live again through experiences of which there is nothing actually present to remind us, and we can desire a new experience which is

as yet only imagined." Besides this, we can plan in advance how to attain our ends, before the time arrives for putting our designs into execution. We can compare beforehand various alternative courses, selecting and rejecting. We can ideally combine and arrange means for the fulfilment of our purposes, as they have never been combined and arranged before in perceptual experience. By merely perceptual experiment it is possible to learn how to manipulate a stick and to strike with it, or how to cut with a sharp stone. But the device of fastening the sharp stone to the end of a stick in order to cut more effectively can only be hit on in the first instance by ideal combination. Though the stick has been used to strike with, it has never before been used as an instrument for cutting; and it cannot be so used without bringing it into combinations which would never occur, if the subject waited for what perceptual experiences might happen to present, instead of ideally anticipating and predetermining the future. Besides this practical function, ideal construction is also manifested in the interpretation of perceptual data which links them together as parts of a unified system. We leave a fire burning, and on our return find it burning no longer, and we accordingly represent it as having gone out or been put out in the interval. Such ideal interweaving of perceptual data yields the presentation of a connected world.

Idea and Image. — The phrase "train of ideas" implies a serial process in which certain distinct constituents of the train, called ideas, follow one another in time. What is the nature of each of these distinct constituents or separate ideas? An idea may be defined as a significant mental image. It thus has two components, the image and its

meaning. An image is a presentation which is recognizably like, but really is not, an actual sense-experience. The elements of which it is comprised are like in quality to actual sensations, and their spatial and temporal grouping resembles the grouping of the sensational content of sense-perception. When I mentally picture an orange, though there is no orange present to my senses, I see with my mind's eye a color and shape more or less resembling those of an orange actually seen with the bodily eye. The color and shape are said to be "imaged." Similarly, to image a sound is to hear the sound with the "mind's ear." To image an odor is to smell it with the "mind's nose." To image something is not simply equivalent to thinking of it. I can think of the color yellow without seeing it with my mind's eye. I can think of it by means of the word "yellow," or by representing its position in the spectrum, or in similar ways. There are persons who are simply incapable of forming images of color at all, and yet they can think and talk about colors intelligently.

This is possible because the image is only one constituent of the idea. The other is the meaning which the image conveys, and this depends on its efficacy in setting a certain group of associated dispositions in a state of nascent or implicit excitation.

The value of image for ideal representation depends on its associations; and it is therefore in a great measure independent of its accuracy as a copy of any sense-experience of the object which we ideally represent. Words mentally heard, or articulated, or both, form a most important class of images. But they do not resemble any sensible appearance of the object which we represent by means of them. Their value lies in their representative function, and this depends on the implicit revivals which accompany

them as a sort of mental "fringe" or "halo" (James). So when we do use images which copy the sensible presentation of the object of thought to the eye, or other senses, it is by no means necessary that the reproduction should be accurate. As a matter of fact, it is for the most part very inaccurate; indeed, virtually the same image is intrinsically capable of representing very diverse things. I think of St. Paul's and there floats before my mental view a vague picture of something cup-shaped. If this mental picture could be transformed into an external object so that everybody could look at it, it might not suggest St. Paul's to anybody; it might just as well suggest a variety of other things. Had the general direction of my thoughts been different, I might have used the same image for representing a mosque in Constantinople, or even for representing Constantinople itself. In varying circumstances and varying contexts the same image might have excited different groups of associated dispositions.

Image and Impression. — By "impression" I mean the sensational content of actual perception. We have now to inquire what characters distinguish impressions as such, from images as such, so as to prevent us from confusing them save in very exceptional cases. We may enumerate the following marks as distinctive of the image: —

(1) Its fragmentariness; (2) its independence of our movements; (3) its peculiar mode of behavior as regards persistence and change; (4) its indistinctness; (5) its lack of intensity.

(1) The image as compared with the impression is *fragmentary*. The impression is continuous with the totality of sense-experience at the moment at which it occurs. The stimulus which affects the organ of hearing also produces

tactile sensations in the way of vibration; and these are continuous with the totality of cutaneous sensations. At the same time it modifies organic sensibility more or less, according to its intensity or suddenness. Similarly, visual sensations are intimately combined with tactual and motor sensations of the eye, and so mediately with the touch-experiences of the whole body. Tactual sensations in general are blended with those due to position and movement of the limbs. All sensations of the special senses are more or less fused with the massive sentience due to the state of the external organs of the body. Thus there is at any moment a general context of sense-experience, which includes, in its continuous unity, any particular impression or group of impressions. But the image has no place in this continuous complex. Its place in that context is preoccupied by sensations due to the actual operation of external stimuli. When I mentally picture the Duke of Wellington, it is not my mental picture, but the sensations due to the stimulation of my retina at the moment, which enter into the total context of sense-experience at the moment. And the image has no corresponding context of its own. It occurs in relative isolation and detachment.

(2) Impressions vary *with bodily movement;* for instance when we shut our eyes, the field of view disappears. Images on the contrary do *not* show this dependence on movement; since they are not conditioned by an external stimulus, the varying position of the sense-organs, relatively to external things, can make no difference to them.

(3) Impressions due to the operation of a persistent stimulus display a peculiar steadiness which is *not* found in images. The image fluctuates with the fluctuations in our attention, disappearing when we cease to be interested in

maintaining it. And even when we do our best to retain it unaltered, our success is generally imperfect. Visual imagery in particular, except in the case of exceptional visualizers, "flows and flickers," as Dr. Ward says, like the gas-jets at a fête. These changes are of a very distinctive kind, and may suffice to mark off an image from an impression, when other tests fail. Beside the peculiar steadiness due to uniform persistence of the stimulus, the impression also shows a peculiar abruptness of transition as the stimulus varies, or begins or ceases to operate. Setting aside the "flow and flicker" to which we have just referred, transitions in the trains of ideas, being conditioned by subjective interest and preformed association, bear the character of a gradual development; on the other hand, impressional transitions, being due to change of stimulation, bear the character of something which "happens" to the mind from without rather than of a development from within.

(4) Images as compared with impressions are for the most part *blurred and indefinite*. They lack the wealth of determinate detail which belongs to perceptual experience. In particular the finer differences appreciable in actual perception commonly fail to be reproduced in the image. In this respect, however, there are great differences between individuals, and in the same individual for different kinds of mental imagery. Some people can "visualize" absent or imaginary scenes with a detailed distinctness of form and color approaching that of actual vision. Others distinctly reproduce forms in black and white, but have little power of recalling color. Here and there we find a person who cannot visualize at all. Again, the indistinct visualizer may be able to image articulate sounds with clear-cut precision. Yet the same person may be able to revive inarticulate noise only in a very vague and indefinite

way. The imagery used in ordinary thinking is probably much less distinct than the imagery people are capable of commanding when they make an express effort.

(5) As regards *intensity*, it seems clear that we can reproduce differences of loudness and brightness in much the same way as we reproduce differences of pitch and color. But in general mental imagery is in this respect much more limited in range and much less finely differentiated than sense-perception. There are degrees of loudness and brightness too high to be revived at all; and even within the range of possible revival, which for the most part is very narrow, the finer gradations of intensive difference are not reproduced. But these deficiencies do not seem to account for the unique importance which is generally ascribed to the superior intensity, vivacity, force, or liveliness of the impression. The real reason of this seems to lie in the fact that other distinctive features of the impression are conspicuous in proportion to its intensity, and virtually vanish when its intensity is very slight. Thus the persistent steadiness of impressions when the stimulus persists unaltered is scarcely appreciable when the impression is so faint as to be barely discernible. Similarly, continuity with the general context of sense-experience fails to be an unambiguous mark of the impression, when this is so feeble that it can only be doubtfully and intermittently distinguished amid the mass of other sensations.

Types of Mental Imagery. — Individuals differ greatly in the kind of mental imagery which is predominant in their trains of ideas. Some are mainly visualizers, others mainly auditive; in others reproductions of motor process and tactual experiences or both have a decisive preponderance. Images of smells and tastes do not appear ever to take

the lead; but there are persons who have a quite exceptional gift for reproducing them. This does not mean that every individual falls very definitely into one or other of these groups. Probably most of us belong to a mixed type in which one kind of imagery is more or less predominant, but others are freely used on occasion.

Motor imagery, by which I mean mental revival of muscle, joint, and tendon sensations accompanying movement or muscular tension, occupies a peculiar place. It commonly occurs along with other revivals, and is more or less blended with them, so that its separate presence may sometimes be difficult to ascertain. In recalling the sounds of words, there is commonly a tendency, distinctly or obscurely marked, to articulate them mentally. In visualizing the shape, size, relative position, and motion of objects, there is more or less revival of the experiences of ocular movement constantly present in actual vision. So in recalling smells there is a tendency to reproduce the action of sniffing. The relative prominence of the motor element in these cases may vary greatly. Sometimes it is very prominent. Sometimes it is hardly distinguishable. Where its presence is conspicuous, we speak of motor-auditive, motor-visual, or motor-olfactory imagery.

In the mental life of most of us some form of verbal imagery plays a leading part. In some of us such images are almost exclusively used. Hence in distinguishing individual types, I shall lay main stress on the different ways in which different persons reproduce words.

I myself belong to a well-marked type. Though my general power of visualizing both shape and color is fairly good, I make relatively little use of it in my ordinary thinking. I depend mainly on verbal images, and these are invariably of the motor-auditive type. In reproducing words

I at once hear them mentally and mentally articulate them. My power of reviving sounds which I cannot produce myself is small. I tend to reproduce some imperfect imitation of my own instead of copying the actual noises. Thus in attempting to recall the noise of a dog barking, I mentally say and hear the sound "bow-wow." I know that this is not much like the actual bark, but it is the nearest approach to it I can make.

In my own recall of words the motor and the auditory elements are about equally prominent. I now pass to two cases in which this balance is lost. In the one the motor side is altogether predominant, and in the other the auditory. Some years ago a distinguished Austrian professor of anatomy, named Stricker, published an interesting monograph on speech-images. He there described his own verbal imagery, and undoubtingly assumed that all men were like himself. According to this account words are reproduced merely as suppressed whispers, sometimes accompanied by an incipient twitter of the organs of speech. These suppressed whispers are mentally inaudible. They are mentally articulated, but not heard at all. Stricker states that if he kept his mouth open he could not reproduce labials, and that in general his power of mental reproduction was abolished if his vocal organs were kept in such a position that they could not pronounce the corresponding sounds. About the same time a French writer, Victor Egger, published a book entitled "The Internal Word." In this work he maintained that words are usually reproduced merely as auditory images, and that the presence of a motor element is only an occasional accompaniment. Victor Egger's case is much less exceptional than Stricker's. Probably neither of them described their experiences with strict accuracy. The motor and the

auditory components of a word are intimately fused both in actual speaking and in mental reproduction. Hence if one of them is relatively faint it is likely to escape notice altogether.

In another somewhat uncommon group of cases a person reproduces words predominantly in the form of printed or written characters. In extreme instances a man visualizes in this way the words which he actually speaks or hears. A person belonging to this type will recall a passage in a book by picturing the printed page, and will be able to state whereabouts on the page a word or sentence occurs. He may even be able to read off the words mentally in different orders, — backward, for instance, as well as forward. In delivering without notes a speech which he has previously written, he will see the pages of his own manuscript, and even be disturbed by the occurrence of blots and erasures.

The coöperating play-writers, Scribe and Legouvé, furnish a good example of the contrast between the visual and the auditive types. Legouvé said to Scribe, "When I write a scene, I hear and you see. At each phrase which I write the voice of the person speaking strikes my ear. The diverse intonations of the actors sound under my pen as the words appear on my paper. As for you, who are the theatre itself, your actors walk, they bestir themselves under your eyes. I am auditor, you are spectator." "You are perfectly right," said Scribe. "Do you know where I am when I write? In the middle of the stalls."

Actual odors have often an exceptional power of reproducing other presentations. But few people can mentally recall them save in a very limited and fitful way. There are, however, exceptions. The most striking on record is

perhaps that of Zola the novelist, whose mental imagery has been submitted to a searching and complete examination by Dr. Toulouse. Zola recalled odors with great ease and distinctness — better, it is said, than colors or any other past sensations. For him, almost every object had its distinctive smell: this was true of certain towns, such as Marseilles or Paris, and even of certain streets and of the different seasons of the year. The autumn, for instance, smelled of mushrooms and decaying leaves. In mental reproduction all these distinctive smells were revived vividly and distinctly. Zola was a pronounced olfactive.

A special command of certain kinds of imagery does not seem in general to be connected with any special fineness or vividness in the corresponding sensations. And inversely, the sensations may be vivid and finely discriminating, without a corresponding power of reproducing them. I know persons who appear to have virtually no power of mentally visualizing at all. Yet they see well. A man may be able to discriminate and identify colors when he sees them, and yet have no power of mentally picturing them when he does not see. The conditions which make actual perception possible are not sufficient to make corresponding imagery possible.

CHAPTER XI

CONDITIONS OF IDEAL REVIVAL

We have treated in Chapter VII of retentiveness, association, and reproduction. We now take up the same topic again in special connection with trains of ideas.

There are two aspects both of perceptual and of ideational process — the productive and the reproductive. In perceptual process, motor activity in part follows the tracks traced for it by previous experience; in part it strikes out relatively new lines of development in the way of fresh adjustment to the exigencies of the present situation. Similarly, trains of ideas are based on revival of past ideas and percepts, but they also involve a reshaping, reconstruction, and further development of the material furnished by past experience in conformity with present conditions and interests. The next chapter will treat of the productive side of ideational process. For the present, we shall confine ourselves to the conditions of ideal *reproduction* as such.

Spontaneous Revival. — The order of ideal revival is of course determined by preformed associations. But association is by no means the one essential condition. Ideas also emerge into consciousness of themselves, without being introduced by other associated ideas or percepts. Recent, intense, or persistent occupation with any topic generates a tendency to revert to it independently of any prompting

cue. Rhythmic sequences are peculiarly apt to reproduce themselves in this way, as is exemplified in Mark Twain's humorous description of the importunate recurrence of the lines, "Punch, punch, punch with care, Punch in the presence of the passenjare." In certain recent experiments on memory, series of nonsense syllables were repeatedly read over, and the power of recalling them subsequently tested after an interval of about five minutes. Some of the subjects could not prevent the syllables from rising spontaneously into consciousness during the interval, even though they attempted to divert their attention into other channels. It has also been shown experimentally that the persistent pursuit of a mechanical occupation requiring only slight attention is peculiarly favorable to the free emergence of disconnected trains of ideas relating to interesting topics.

In general, the stronger our propensity is to go on with a train of thought at the time when it is discontinued owing to interruption or fatigue, the stronger is the tendency to revert to it again, provided that our attention has not been diverted from it for too long a time or by other pursuits of too absorbing a nature. An unsolved puzzle such as a chess problem may take so strong a hold on our minds that it persists in haunting us at intervals in spite of our best efforts to exclude it in favor of more important matters. In the acute stages of the war in South Africa, the thoughts of most people spontaneously turned to this topic, whenever they were not otherwise preoccupied, without needing any prompting cue in the way of association. It is spontaneous revival which so often murders sleep. We do our best to divert our minds from some topic which keeps us awake by the importunate persistency of its recurrence. We may succeed for a time, and so drop into a doze.

But presently we find ourselves awake again, and again following up the old train of thought with painful intensity.

The commonest instances, so common that they are likely to escape notice from their very triviality, are those in which we resume an occupation or train of thought after a relatively slight and transient interruption. I may, for example, be engaged in thinking out some psychological difficulty when I am called on to read a letter, to say what I will have for dinner, to give directions to a servant, to make up my fire or to put a fresh pen in my penholder. The interruption really diverts my attention for the time being; but as soon as the distraction is over, I return as matter of course to the previous train of ideas, just as a stream returns to its old channel when a barrier which had obstructed it is removed.

Association and Spontaneous Revival. — The conditions which determine spontaneous revival are operative also when the sequence of ideas is determined by association. The course of ideal reproduction ordinarily depends on the conjoint operation of both factors. The ideas which are most apt to recur spontaneously are also most apt to be suggested by association. Revival partly depends on the preformed associations, partly on the intrinsic excitability of the disposition it tends to bring into action. But the same kind of conditions which favor spontaneous reproduction also render mental dispositions in general more excitable and so facilitate the working of association in certain directions rather than in others. When A tends to recall by association either B or C or D, it will by preference reinstate the experience which has most interest for the subject or one which has recently and strongly engaged his atten-

tion. If a man's prevailing interest lies temporarily or permanently in the direction of Psychology or Arctic exploration, or bicycling, or nonsense rhymes, whatever he sees or hears or thinks is likely by preference to suggest something connected with these rather than with other subjects. If I hear the name "Smith," it will, *ceteris paribus*, call up to mind the particular Smith who has of late taken up much of my attention in preference to the many other Smiths with whom I am acquainted. The word "Australian" is likely to suggest to the cricketer a coming test-match; to the politician, the relations between the colonies and the mother-country.

In general we may compare the course of associative revival to the spreading of a fire in a mass of fuel which is inflammable in very variable degrees in its different parts. The spreading flame corresponds to the reproductive power of preformed associations; the varying inflammability of the fuel corresponds to the varying excitability of mental dispositions.

"Association by Contiguity." — In Chapter VII we discussed those associations which are formed in the course of the same continuous attention-process — a process concerned throughout with the same total object so as to focus its successive features and aspects in successive order. We then saw that the degree of unity of the total object is a most important factor in determining the strength of the resulting associations. We also noted the part played by contiguity as a coöperative condition. The items which emerge successively into the focus of attention are, *ceteris paribus*, more intimately and firmly associated the nearer they are to each other in the temporal sequence. The association is, *ceteris paribus*, strongest when the items

associated have been presented simultaneously or in immediate succession.

We have now to inquire whether bare proximity in time, apart from anything which can be called continuity of interest or attention, is sufficient of itself to generate associations. According to the traditional "law of contiguity," as stated, for example, by James and John Mill and Professor Bain, experiences form associations by the mere fact of their occurring simultaneously or in immediate succession. It would be going too far to deny the possibility of this. But it seems difficult to discover instances in which bare proximity is clearly the sole operative condition. In general there is also present some form and degree of continuity of interest. In Chapter VII we considered only attention-processes concerned throughout with the same total object. But when attention is being transferred from one total object to another there is a certain continuity at the moment of transition. For the moment the mind is not occupied with either topic exclusively, it is occupied with the passage from the one to the other. Just in so far as the new process is experienced as an interruption of the prior one, it is a constituent part of it, an incident in its progress. This kind of continuity gives rise to many associations. I may be playing chess when some one brings me a telegram containing important news. When in the future I think of the telegram, it is likely to remind me of the game and *vice versâ*. The likelihood is the greater the more vividly the interruption was felt as such.

We must also note that the distinction between the total object of one attention-process and that of another by no means implies complete disconnection. They may have more or less community of nature or interest. A man in reading his newspaper may attend successively to the Boer

war,[1] to the Japanese treaty, to reform of procedure in the House of Commons, to the cricket in Australia, to the horse racing, to the University news, to a trial for murder, and so on. These various topics have so much in common that they all belong to the news of the day. The interest in each of them is a branch of the general interest in knowing what men are saying and doing. The topics again fall into distinct groups, each unified by a certain special community of nature and interest. There is the political group, the sporting group, etc. To take another illustration, there is a certain thread of continuity permeating the various occupations of an ordinary day. They are connected as forming part of the general scheme of the day's business. And this continuity, together with the fact that they are successively attended to, is sufficient to give rise to associative connection. The total experience of the day seems to leave a total disposition behind capable of being reëxcited as a whole in the way of implicit revival. If some one asks me, "Did you carry an umbrella yesterday?" I may answer immediately and decisively, "No." I do not need to recall the successive details of my yesterday's doings in order to discover whether walking with an umbrella was one of them. And my attitude is not at all like that of a mere failure to remember. I positively remember *not* doing what is suggested. I feel it at once to be incongruous with my total impression of yesterday's experiences — due to the reëxcitement of the total or cumulative disposition which yesterday's experiences have united to produce. It is with this total impression of yesterday as a whole that I start in recalling its incidents one by one. The detailed recall is the filling in of a general scheme; it is translation from implicit into explicit revival.

[1] This was written in the early months of 1901.

Understanding "continuity of interest" in this wide sense, it may well be doubted whether any associations are formed without it. It would seem that the only cases in which bare proximity could operate as the sole condition would be these associations between presentations which escape attention altogether or between these and a presentation which is attended to. But it is hard to find unambiguous instances of this, and in any case the associations so formed must play a very subordinate part in our mental life.

Emotion as determining Ideal Revival. — The phrase "train of ideas" suggests a serial sequence in which each successive item calls up the next. But we must always bear in mind that in a continuous attention-process each successive presentation is apprehended in relation to the total object, and that the nature of this object is a most important factor in determining the flow of ideas. The general direction of mental activity tends to exclude the revival of irrelevant ideas, just as it tends to ignore or dismiss them when they do emerge. When our dominant interest is in mythology, the thought of the rainbow will be likely to suggest Iris, the messenger of the gods. When our dominant interest is in Physics, the thought of the rainbow will be likely to suggest the laws of the refraction of light. The word "match-making" will call up different ideas according as it is used in a conversation on mothers and daughters, or on British industries.

Each of the various typical forms of emotion or emotional mood involves a certain general direction of interest. Each is concerned with a certain kind of object; fear with danger, anger with insults and injuries, grief with loss and defeat, joy with success and gratification, jealousy with the encroachments of others on what we regard as our own

peculiar possessions. Hence these emotional states severally favor the revival of certain groups or classes of ideas. In a fit of depression a man finds his mind filled with gloomy anticipations and memories in whatever special direction his thoughts may turn. An angry or ill-tempered mood seeks and finds its own appropriate food by directing the flow of ideal revival into certain channels; everything suggests to it representations of intended or real injury, neglect, or persecution, and thoughts of resistance or reprisal. Similarly, strong and persistent fear calls up ideas of danger and insecurity. In mental depression we see only the dark side of things. Fresh air and exercise, by bringing back a cheerful disposition, may give a quite new direction to our thoughts, so that we now see evidence of success and progress where we had previously seen defeat and failure. The emotion of itself tends to call up the kind of ideas which are congruent with it, and afford it the appropriate field for its own development. And when these ideas arise, they become associated with each other. Hence an emotional mood may become the centre and rallying point of a fixed circle of ideas which recur whenever it recurs. Those who are subject to recurrent fits of depression find themselves reverting, on each return of their mental gloom, to the same monotonous cycle of distressing topics. They are persistently haunted by these, and escape from them only when something occurs to change their general emotional state. This may occur through the advent of some striking piece of good fortune, or the like; but at least as often it depends on a change in their general bodily condition.

Reproduction *by* Similars. — A certain appearance of the sky may suggest to me coming rain. It does so because

in the past I have noticed rain to follow when the sky looked more or less like this. The revival depends on likeness; but the likeness need not be complete. Indeed, it is in the last degree improbable that it should be complete. All that is required is more or less similarity between the present aspect of the sky and other appearances which have been followed by rain in the past.

This example is typical. In general when two presentations A and B have united in past experience so as to form an association, what is required for the ideal revival of B is not an exact repetition of A but only its partial repetition. Any one of a series of presentations A_1, A_2, A_3, etc., having more or less community of nature with A, will tend to recall B.

A young child has learned to use the word "moo-cow" when he sees a cow. He notices a small article on the dinner table and calls it also a moo-cow. It is in all respects unlike the animal in field or farmyard, except in having ivory tips which are not altogether unlike horns. The same child has seen a band playing wind instruments. Shortly afterward he puts a croquet mallet to his mouth and makes a noise in imitation of music. The printed or written letters *abc* tend to call up *def* through association, and this tendency operates in spite of variation in their size and color and within limits in spite of variations in their shape.

What is it that really takes place in such cases? A has formed an association with B, and in consequence a more or less similar A_1 tends to revive B.[1] It is sometimes said that what really happens is that A_1 first recalls A, and that A then reinstates B. But this account of the process is

[1] The difference between A and A_1 in many cases leads to a modification of B — to the revival of a B_1. But this belongs to the productive side of mental process, to be dealt with in Chapter XII.

clearly contrary to the facts of actual experience. When the present appearance of the sky suggests to me impending rain, it is by no means necessary that it should first set me thinking of some other similar appearance which has been followed by rain on a previous occasion. In order that the letters *ABC* may recall *DEF* it is by no means necessary that my mind should first revert to a past instance in which *DEF* followed *ABC*.

The true explanation is that so far as concerns the psychology of retentiveness and reproduction, similarity is reducible to partial identity. So far as A_1 resembles A, its occurrence is a partial recurrence of A. Its occurrence involves a partial reëxcitement of the mental trace or disposition left behind by A, with a consequent tendency to reëxcite the associated disposition left behind by B. Only those features of the present appearance of the sky which are common to it and to past appearances followed by rain, now suggest rain to my mind. The features which distinctively belong to my present experience do not operate at all in producing the ideal revival, though they may modify it in various ways, as we shall see in the next chapter.

Reproduction *of* Similars. — Besides suggesting rain, or instead of suggesting rain, the present appearance of the sky may suggest a similar appearance seen by me a week or a year ago. A_1 may recall A itself instead of recalling a B which has been associated with A.

Some psychologists would call the revival of A by A_1 a case of reproduction by similarity, whereas according to them the revival of B by A_1 is a revival not by similarity, but by contiguity. This language is misleading. So far as similarity operates at all, it operates equally in both processes. In both processes it is not A_1 as a total presenta-

tion which recalls A or B, but only those features of A_1 which are common to it and to A. So far as A_1 differs from A, it does not tend to revive either A or B. If we symbolize by C that which is common to A and A_1, it is C which in both cases is the operative factor in producing the revival. The differentiating features of A we may symbolize by D and those of A_1 by D_1. Neither D nor D_1 are operative in bringing about the reproduction either of A or B.

[[1] The same fundamental principle of association is involved in both processes. C and B have in past experience entered into the same continuous attention-process: hence C tends to recall B. But C also tends to recall D for the same reason. C and D have also entered into the same continuous attention-process in past experience. We must remember that what C recalls is not, properly speaking, the total presentation of A, but only that part of it which is not already given. C cannot recall itself but only D. Yet there is a most vital difference between the two kinds of revival. The difference is not in the operative factor bringing about recall; for in both cases this is C. Nor does it lie in the principle of association, for in both cases this is continuity of interest or attention. The difference is rather in the *results* of the two processes and it depends on the peculiar nature in each case of what is reproduced. B is a total presentation, just as A_1 is a total presentation, and when it is recalled it connects itself as a whole with A_1 so as to form an individual link in the same serial succession of ideas, — in the same continuous attention-process. The coming storm is thought of as a concrete event following the present total appearance of the sky, just as in my past experiences other

[1] If the beginner finds the passage in brackets too difficult, he may omit it on a first reading.

storms have followed on similar appearances of the sky. But when C recalls D, this is not possible. D instead of uniting itself with the total presentation A_1 as a successive link in the same train of ideas, unites itself immediately with C so as to reconstitute the total presentation A. But in this process D must displace D_1 and be substituted for it. For D and D_1 are incompatible. They cannot both be apprehended in the same relation to C as features of the same total presentation. Hence C is twice presented, once as part of the total presentation A_1, and again as part of the total presentation A.] When the present appearance of the sky suggests a past appearance more or less similar, the features common to both are duplicated in consciousness. They are presented in two distinct instances or examples. This would still be the case, even if the present appearance exactly resembled the past. For the attendant circumstances would differ so as to be incapable of union in the same relation to the identical appearance as to constitute the same total presentation.

The revival of B by A_1 may be called serial revival because B is recalled as a successive link in the same mental train to which A_1 belongs. The revival of A by A_1 is an instance of what we may call the revival of similars by similars, or simply the revival of similars. Properly speaking, what is recalled in this process is not A but only those features of A or connected with it which distinguish it from A.

It is to be clearly understood that the revival of similars by similars does not at all depend on the similarity having been previously noticed. So far as the revival depends on previous attention to the similarity, it is a serial revival. If on some occasion I have met two men and noticed that they resemble each other, an association is thereby established between the total presentations of

each. When in the future I meet one of them separately, my attention will tend to turn to the other because it has already dwelt on both of them simultaneously or successively when I met them together. But if an entirely new acquaintance reminds me of an old friend because they are like each other, this is a pure case of the revival of similars. The revival of similars is of immense importance in our mental life because it supplies materials for ideal construction which could not be obtained in any other way. Its value in this respect is connected with its being the most important form of divergent or digressive revival.

Divergent Revival. — More or less similar presentations may be attended to in the course of mental trains otherwise disconnected, so that the corresponding dispositions acquire a variety of divergent associations. Thus each successive link in a train of ideas may have a multitude of cross-associations capable of leading to the revival of ideas belonging to other trains. Hence, in pursuing any line of thought, digressions are apt to occur; ideas are apt to be recalled belonging to more or less disconnected lines of thought. While I am thinking of the rainbow as illustrating the laws of optics, Wordsworth's line, "I need not proud Philosophy to tell me what thou art," may intrude itself into my scientific train of ideas.

Divergent reproduction may also occur in perceptual process. The child may be in the habit of both shaking his rattle and of putting it in his mouth to suck, and he may turn suddenly from the one occupation to the other. But such digressions play a very much more important part in ideational process. Ideal digression is always possible because the flow of ideas is independent of the actual environment present to the sense. If in thinking of a friend's

affairs, I recall the idea of a book which I have lent him, and if this book happens to be Nansen's "Farthest North," my thoughts may fly off to the Arctic regions, leaving my friend altogether. But on the perceptual plane I could not begin to occupy myself with the North Pole unless it happened to be accessible to my senses.

When divergent revival occurs, we may either leave the old train of ideas for a new one, as in this example, or we may proceed with the old. In proceeding with the old we may either disregard the ideas awakened by the collateral association or we may utilize them by incorporating them with requisite modifications in our ideal construction. Similarly, when we leave the previous train for a new one, we may in so doing retain and utilize materials derived from the old. A passage from Walter Scott's "Journal" may illustrate the incorporation of a collateral suggestion in the previous train of ideas. After his financial ruin, his mind dwelt persistently on the necessity of earning money by his literary labors in order to pay his debts. The question whether his writings will continue to win the favor of the public gives him especial concern, and he repeatedly recurs to it in his diary.

The following is a characteristic passage: "Talking of writers, I finished my six pages, neat and handsome, yesterday. N.B. All night I fell asleep, and the oil dropped from the lamp upon my manuscript. Will this extreme unction make it go smoothly down with the public?" Here the writer's main line of thought related to the progress of his work and his prospects of success with the public. The dropping of the oil on his manuscript was a collateral suggestion. But he connects it in a playful way with his dominant interest, and so incorporates it with the previous train of ideas. Perhaps the oil will make his

work go smoothly down with the public. My own use of this illustration exemplifies the reverse case of material derived from a previous train of thought being retained and utilized in another which displaces it by a divergent revival. After writing part of the present chapter I began to read Scott's "Journal," and came upon the passage quoted. The oddity of the mental transition from the dropping of oil on a manuscript to success with the public diverted my attention to psychological topics, and in particular to what I had just been writing about. I then noticed that the passage in Scott furnishes a fairly simple example of the way in which a train of ideas may be modified and developed by incorporating digressive revivals.

The examples of divergent reproduction, to which I have referred, are examples of serial reproduction, and not of the revival of similars. The thought of my friend revives the idea of the book called "Farthest North," and of Arctic explorations, simply because I have lent this book to him. The book does not resemble him, or anything connected with him. But by far the most numerous and important cases of digressive revival are cases of the revival of similars by similars. Such revival is essentially digressive except when the main interest of thought explicitly consists in finding a group or series of similar things, as in classifying or searching for precedents. In general, the most copious and the most important materials for ideal construction are supplied by the revival of similars. It is the most common means of bringing before the mind in one view objects which have been previously presented in disconnected contexts remote from each other in space or time or both. Thus it is, as Bain remarks, the main foe of routine, and those minds in which it is a frequent mode of transition are more apt than others to form strikingly fresh ideal combinations. In par-

ticular, it is the most abundant source of materials for the process of comparison whereby the features common to similar objects and situations are consciously distinguished from those in which they differ. Thus it forms a line of demarcation between mind in the lower animals and mind in man. For, as James points out, there is little or no evidence in the case of animals for the reproduction of similars followed by comparison.

Of the way in which divergent revivals of this kind may be incorporated with the main train of thought, something will be said in the next chapter. Here it will be sufficient to refer to the simplest case, that in which the similarity simply *illustrates*, by making some feature of the current train of ideas more vivid and distinct. This is exemplified by all simile, metaphor, and parable. Scott describes a state of depression into which he fell after the death of his wife. "A kind of cloud of stupidity hangs about me, as if all were unreal that men seem to be doing and talking about."[1] A later entry in the journal is as follows: "I had sound sleep to-night, and waked with little or nothing of the strange dreamy feeling which made me for some days feel like one bewildered in a country where mist or snow has disguised those features of the landscape which are best known to him." Here his own mental condition suggests the similar feelings of one who finds the features of a familiar scene masked and transformed by mist or snow, and the suggestion is utilized to give emphasis and distinctness to the points of agreement which gave rise to the digressive revival.

[1] "Journal," Vol. V, p. 194.

CHAPTER XII

PRODUCTIVE ASPECT OF IDEATIONAL PROCESS

Production and Reproduction. — The productive aspect of mental process presupposes the reproductive and is unintelligible apart from it. But the two aspects are never identical; and association is sufficient to account only for one of them. It accounts for the recurrence of previously experienced combinations, but not for the making of new. Hence such a phrase as "constructive association" which Bain uses is, strictly speaking, meaningless. It is wrong to say as he does that "by means of association" the mind has the power "to form combinations or aggregates, different from anything actually experienced." Association accounts for reinstatement. But it does not account for the new combination into which the reproduced presentation enters either in the process of reproduction or after it. It does not account for the fact that the reproduced presentation modifies and is modified by the new context in which it becomes incorporated.

The movements of a lion suggest to me those of a cat, and I compare them. If I have already noted their likeness and difference in the past, the process may be mainly one of reproduction. But if the comparison takes place for the first time, it is a new production which association does not adequately explain. Association explains why at the present moment the idea of a cat occurs to me. But it does not of itself account for the presentation of the resemblance and difference between a

cat and a lion. This presentation cannot be reproduced, for it has not occurred in my experience before. The resemblances and differences are observed for the first time. The thought of these resemblances and differences becomes associated in the process of attending to them with the idea of a cat and with that of a lion. But this association is a result, not a cause, of the new experience. Take another illustration. I am acquainted with houses and I am acquainted with things made of gold. But I have never hitherto thought of a house consisting of this material. I happen, however, to be looking at the house of a man who is exceedingly rich and very ostentatious of his wealth. I remark, "Brick and stone are hardly suitable for Smith's house; it ought to be made of gold." Here the thought of Smith suggests that of gold by association. But it is not association which makes me think of the gold in relation to the house. This is due to my being already interested in the house at the time when the idea of gold emerges. Still less does association account for the peculiar way in which the gold becomes related to the house in my thought. I have had experience of gold in the shape of ingots, or of coins used as money, or watch chains, rings, and the like, used for ornament. But I have never had experience of gold in the shape of a house and used for living and sleeping in. The idea of the gold as thus shaped and thus used cannot therefore be reproduced by association. It is a new mental product. It arises because I am interested in the material of the building before me in a particular manner. I am interested in finding some material other than the actual brick or stone which shall be more in keeping with the general impression Smith and his belongings have made upon me. When gold suggests itself to my mind I utilize and trans-

form the idea so as to complete the thought which is in process of formation. The idea of the gold makes my thought determinate where it was previously indeterminate. But in fulfilling this function, in entering into this new relation, the idea of the gold receives new determinations which are not and cannot be reproduced from previous experience.

Forms of Combination. — Psychologists have not studied the forms and conditions of mental production as they have those of reproduction. They commonly content themselves with speaking vaguely of processes of combining and separating, and they insist that the materials combined and separated must be given in past experience. Thus Locke tells us that the "dominion of man, in this little world of his own understanding, is much the same as it is in the great world of visible things." He can only "compound and divide the materials that are made to his hand."

Against this view it must be urged in the first place, that it wrongly identifies all productive process with constructive process. But such operations as comparison and abstraction, in their pure form, do not involve construction in the strict sense. We construct when we imagine gold substituted for stone in the house we are looking at. But we do not construct in comparing a lion and a cat. There is merely an alternate focussing of attention now on the one and now on the other, so as to bring out their differences and resemblances. In the second place, the contrast between the materials combined and the process of combining is very apt to mislead. It tends to conceal the fact that *forms of combination* are themselves part of the objective content of consciousness, and that in every constructive process we start with such a form derived from past experi-

ences. Thus in our example, the way in which bricks, stones, etc., are put together is as much part of the presented object we call a house as are the bricks and stones themselves. In imagining the house to be built of gold we retain this general plan of combination and only alter one of the items which enter into it.

Comparison and Abstraction. — As we have indicated, there are two kinds of productive process. The first consists merely in a certain play of attention, such as is involved in Comparison. In the second, a relatively new object is constructed out of given materials in accordance with a given plan of combination or relational scheme.

In *Comparing*, the total object of attention includes the two things compared. Each is focussed in turn, and there is an endeavor to keep the one still in view in the very act of concentrating attention on the other, so as mentally to superpose them. The result is that relations of resemblance and difference emerge, and the points of agreement are more and more definitely distinguished from the points of disagreement. This distinction of common features from divergent features is called abstraction, when the divergence consists in the specific variation of a certain generic nature. Right-angled and obtuse-angled triangles agree in being triangular. But they are so in different ways. To distinguish between the common character of being triangular and its specific variations in different triangles is to abstract. Abstractions arise in connection with the process of comparison and also, as we shall see later, with the use of language.

Comparison is essentially a productive process. For the generic nature as such is not apprehended at all until it is distinguished from the specific determination in which it is,

so to speak, embedded. To cognize triangles is one thing; to cognize the fact of their being triangular is quite another. This is not presented to consciousness until the common character of various kinds of triangles is distinguished from their specific differences. Similarly, it is possible to be aware of a group of three stones, or of three knocks at a door, without being aware of the number three. In order to be aware of the number three, it is necessary to distinguish the character of threeness, common to three stones, three knocks at a door, or three terms in a syllogism from the specific differences. It may be said that we are implicitly aware of the abstract feature before the abstraction takes place. But what is apprehended implicitly is never for consciousness the same as what is apprehended explicitly. It is a great mistake to regard the difference made by abstraction as consisting merely in a "leaving out," *e.g.* in leaving out the special features of this or that triangle so that only its triangular nature in general is attended to. For, in the first place, the term "leaving out" suggests a mere ignoring or disregarding. But this is only possible when the abstraction is already made. In the first instance what is required is not a mere ignoring but an express distinction between the generic nature and its specific determination. Again, the phrase "leaving out" is misleading in another way. It suggests that the abstract feature is already present to consciousness before other features are left out. But in fact the so-called residue no more exists for consciousness before the abstraction, than the statue exists in the block of marble before the sculptor has "left out" the chippings of his chisel.

It should be added that we do not become aware of the specific determinations as such until we become aware of the generic nature as such. The two cognitions are strictly

correlated. You must be aware of the general nature common to various triangles in order to recognize this or that figure as a triangle of a certain kind.

Types of Ideal Construction. — I cannot pretend to give anything like an exhaustive account of the forms of constructive process. It is a subject which has hitherto received very inadequate treatment from psychologists. A brief reference to one or two main types of construction must here suffice.

Starting with a certain form of combination or relational scheme, we may transfer it to new matter. Thus in composing a sonnet, the general sonnet structure is transferred to new words. All literary imitations, conscious or unconscious, come under this head. A writer saturated with Elizabethan literature may write sonnet after sonnet unmistakably Shakespearean in rhythmic form, turn of expression, and arrangement of matter. Yet there may not be a single characteristic phrase or sentence which is actually borrowed from Shakespeare, and the writer may not be even aware that he is imitating. Sometimes a definite model is expressly kept before the mind. Thus I may copy the rhythm of "Home they brought her warrior dead" by "Up they sprang and went away." In such parodies as those of Scott and Wordsworth in "Rejected Addresses," not only peculiarities of rhythm and cadence, but characteristic forms of thought and expression are transferred to new and laughably incongruous matter. Comte's construction of the polity of his positivist state furnishes an example of formal transference on a grand scale. The positivist state is framed on the formal analogy of the Roman Catholic Church. The transfer was probably more or less unconscious in Comte's mind. A man steeped in

the formulas and modes of procedure of formal logic will even unconsciously apply them to all kinds of topics. The student of physical science, when he turns his attention to psychology, is likely to attempt to fit the facts of mental process into a mechanical schema.

It is not, of course, possible to superinduce any form of combination on any kind of material. We cannot frame a hexameter verse of odors or colors, but only of articulate sounds. Even where the transfer is possible, it may be more or less imperfect. The form of a Latin hexameter is very imperfectly preserved in its English counterpart where accentuation is substituted for quantity. Further, the new matter may require and receive more or less modification, including omissions and additions, in order to fit it into the relational schema. As a very simple example we may take the case of the pronunciation of words being altered for the sake of a rhyme or pun. The attempt to fit the facts of mental process into a scheme of mechanical relations is likely to lead to grave omissions and falsifications. The same is true of any thoroughgoing attempt to construe the constitution of insect-communities, such as those of bees or ants, on the analogy of human society.

In a second group of cases, the point of departure is a given whole with a specific form of combination, and the construction consists in altering one or more of the partial items which enter into its composition. This is illustrated by our previous example of the mental substitution of gold for brick or stone as the material of a house. Other simple instances are the mental picturing of a white crow or of an unpapered room as it will appear when painted. Sometimes the attempted alteration may be seen to be inconsistent with other features of the whole with which we are dealing. This difficulty may be removed by mentally modifying

these features or by supposing them suitably modified without inquiring how. Or we may refuse to attend to the points of discrepancy. But if we are interested in these and also in retaining them unaltered, the construction is a failure. We may imagine a rope of sand, but we cannot, while keeping in view its composition, suppose it to be supporting a heavy weight. It will, however, do well enough if we merely wish to assign the making of it as a task for the devil.

In a third kind of construction, part of a whole is given to start with, but the rest is initially indeterminate, and has to be filled in according to some more or less definite plan of combination. A familiar example is that of one man finishing a story which another has begun, as Wilkie Collins finished "Edwin Drood." Another is the supplying of gaps in manuscript where parts of the text have been obliterated. Under the same head comes the reconstruction of the skeleton of an unknown species of animal where the only data are some of the bones and general anatomical analogies. Serial order is a relational form which lends itself in a peculiar degree to this kind of construction. It is essentially constituted by relations of betweenness or intermediacy: *c* is said to be intermediate between *a* and *b* in a certain respect, when it is in that respect more like each of them than they are like each other. One point on a line is between two other points when it is nearer to each of them than they are to each other. One shade of gray is between two others when it is darker than the first and lighter than the second. If *b* is thus intermediate between *a* and *c*, and if *c* again is intermediate between *b* and *d* and *d* between *c* and *e*, *a b c d e* is an ordered series. Now if part of such a series be given so that we can discern the mode of its formation, we are always able to think of it as

continued, and we are often able to supply the continuation in more or less definite detail. If it is given with gaps in it, we are able to notice these as such, and sometimes we can fill them in with more or less precision. In a graduated series of grays, where each is in a certain degree darker than its predecessor, there may occur a sudden leap to a gray which is much darker than the form of the series requires. We shall then notice the discontinuity, and according as we are good or bad visualizers, we shall be able mentally to supply intermediate shades with more or less approach to precision. A very bad visualizer may not be able to do so at all. In the case of a series of lines diminishing in length according to some fixed ratio, the process of filling in gaps will be for most of us much more easy and accurate. Where we have to do with numerical series, the process of transformation by which a transition is made from any one term to that which succeeds it is entirely within our power. Hence we can continue such progressions or supply gaps in them with complete precision. Given the series 1, 2, 4, 8, 16 ··· we can prolong it *ad libitum*. A good example of mental construction based on serial order is afforded by the search for missing links in biological development. Owing, let us say, to the imperfection of the geological record, there are apparent lacunæ in the succession of the forms of animal life. But the biologist can to some extent mentally supply these, and he sometimes finds his conjectures verified by subsequent discoveries.

The Revival of Similars as determining Ideal Construction. — A young child finds a dead fly lying on the window-sill. He looks at it curiously. Then he picks it up, and moves it along the window-pane, doing his best to make

it behave as he has seen living flies behave. What has taken place in the child's mind? First of all, the dead fly has called up the idea of a living fly crawling up the pane. This is mere revival of similars. In the next place the dead fly itself is ideally represented as crawling up the pane. This is an ideal construction based on the revival of similars. The dead fly is ideally transformed so as to assimilate it to the living fly. In the third place the child attempts by its own action, as far as may be, to actualize its idea, thus giving distinctness and vividness to its ideal construction.

This example is so far typical that in all ideal construction which takes its prompting cue from the revival of similars there is an attempt to make the similarity more complete by extending it to new points.

Further, it is plain that if the child continues to think of the fly as without spontaneous motion, he cannot succeed in ideally representing it as crawling up the pane. The nearest approach he can make to this is to represent it as being passively moved as he himself actually proceeds to move it. This again illustrates a point common to such constructions. The assimilative transformation is conditioned and modified by the differences so far as these are mentally retained and recognized in the process. The result is the production not of exactly similar features but of features which correspond to each other, as far as the circumstances will allow. We find α corresponding to a, and we mentally supply β corresponding to b.

In our illustration what goes on in the child's mind is probably only a play of fancy. He is therefore at liberty to ignore as he likes the actual features of the object he is dealing with so that his ideas may flow freely. He may represent the dead fly as alive and as creeping up the pane

of itself. Such freedom is possible when we give the reins to imagination. But it is otherwise when we are endeavoring to think of things as they are, or when we are engaged in contriving means to practical ends. In such mental attitudes we submit ourselves to the control flowing from the nature of the object, and we are therefore bound to dismiss or modify ideal constructions which conflict with what we recognize as real.

In contrivance of means to ends the interest of thought lies in ideally representing a series of changes within our power to produce, and such that when they actually take place they lead up to a desired result. We need an ideal bridge which shall actually bear our weight when we attempt to cross it by putting our plan in execution. In ideal construction of this kind, the revival of similars plays a most important part. Suppose that a man has occasion to throw a piece of paper to a great height. The paper flutters back again long before it reaches the place aimed at. Not only does it flutter back when he actually throws it, but he is compelled to think of it doing so when he ideally represents himself as throwing it. He can attain his end neither actually nor in idea. But as his mind dwells on the problem the partially similar case of throwing a stone suggests itself. He can easily suppose himself throwing a stone as high or higher than his present mark. His difficulty will be solved if he can mentally assimilate the case of the paper to that of the stone, — if he can think of change in the paper, within his power to produce, which shall make it practically like the stone so far as the act of throwing is concerned. But in his past experience he has wrapped paper round things, and found that for purposes of manipulation the paper then became virtually part of the thing it was wrapped round.

He proceeds mentally to assimilate the case of the present paper and stone to these remembered cases. He thinks of the paper as wrapped round the stone, and of himself as throwing the two together. Now his ideal construction moves freely to its end. An ideal bridge is made between actual conditions and the desired result. He has a plan which he proceeds to put into execution. Perhaps he fails, not because he cannot throw his missile high enough, but because he cannot direct it with sufficient accuracy. He has then to resort anew to ideal construction. It may be that the shooting of an arrow from a bow occurs to him, and he hits on the plan of tying the paper to the arrow. Thus both distance and accuracy of aim are secured, and he is at length successful.

We may illustrate ideal construction in mere pursuit of knowledge as distinguished from practical contrivance by supposing a problem the inverse of that which we have just considered. Suppose the fact of the paper having been thrown successfully to be given as the starting-point of thought, and the problem to lie in discovering how it was done. This may lead to a train of thought analogous to that which gave birth to the original contrivance as we have described it. In this instance the datum to be explained is a result brought about by human agency. But the mental processes involved are essentially similar when we have to do with natural phenomena. Indeed, our insight into the constitution of the physical world is very largely based on the experiences gained in the course of our practical activity.

To pursue this topic farther would lead to an investigation of the psychology of processes which are treated from a different point of view in Logic under the head of inference by analogy, induction, framing of hypotheses, and

the like. This would lead us too far. But the forms and conditions of mental construction, indicated however imperfectly in the present chapter, form the basis of such logical operations.

Conceptual Character of Ideational Process. — Conception consists in thinking of the universal in distinction from the particular. We have already seen that this takes place in the processes of comparison and abstraction. We have now to point out that ideational process in general is more or less conceptual in its nature. Ideal representation is always of universals, and of particulars only as instances or cases in which universals are particularized.

Universals are of two kinds, the general or distributive and the collective or, as it is sometimes called, concrete. The conception of a class or of anything as belonging to a class is concerned with the general or distributive universal. To think of what is general is to think of common characters as repeated or capable of repetition in a plurality of particular examples. When we think of horses as a class we think of certain characteristics, such as a certain kind of shape and a certain type of anatomical structure as found in this, that, and the other horse. When we think of an animal as being a horse, we think of it as a particular instance in which these common characters are exemplified. The collective universal is the form of combination or the relational plan of a complex unity, thought of in distinction from the particular details which it interconnects. This may be illustrated by our conception of any mathematical progression when we have once understood the process of transition from each term to the following. Take, for instance, the series 1, 2, 4, 8, 16 ... *n*. We have a collective concept of the series when we have followed it

so far as to discern the law of transition from one term to another. This pervading form of connection is thought of in distinction from the particular terms which we have specified or might go on to specify. Space and time are collective universals. Particular spaces are parts of space. They are not merely instances of a class concept; they are combined in a continuous unity which may be thought of in distinction from its particular parts. Similarly, an individual person or thing is a collective universal. When we think of John Jones, we do not think merely of his particular state at a certain moment. We think rather of the systematic unity of his various successive states, actions, and relations, bodily and mental. Whatever states, actions, and relations have entered or will enter into this systematic unity we regard as belonging to the individual existence of John Jones, even though we do not know what they are.

It is plain that ideal construction must be a conceptual process. The relatively new products which it forms are gradually built up by recombining in new ways partial features and aspects of the concrete detail of perceptual experience. In other words, it is a synthesis of universals, each of which gives a further specification of what the others leave indeterminate. We can no more use the total content of perceptual experience in the process of ideal construction than the builder can use for his purposes the stone as it is found in the quarry. In both cases putting together presupposes taking to pieces. The breaking up of the content of perceptual experience into its partial aspects may be called conceptual analysis: the reconstruction may be called conceptual synthesis. Both processes go on together in intimate correlation. Not only is synthesis based on analysis; the need for relatively new construction brings with it further conceptual distinctions.

The process of putting together prompts and determines the process of taking to pieces. The grand instrument of conceptual analysis and synthesis is language, and we shall gain a clearer insight into its nature when we come to treat of this topic in Chapter XIII.

In ideal construction the materials combined are universals of the general or distributive kind. It is the special function of the collective universal to furnish a plan or guiding principle of synthesis. The more complex and important types of constructive process, such as we have previously described, start with a certain form of combination or relational scheme and proceed to fill in the details by progressive specification.

It is not merely processes distinctly recognizable as constructive which deal with universals in their distinction from particulars. This holds good of ideal representation in general. It holds good even for the case in which we recall a particular series of events in our own past history, where our dominant interest is in merely reproducing past perceptual experience without transforming it. Forgetfulness and in particular the fragmentary and indistinct character of mental imagery are sufficient to make the recall partial and indeterminate. Besides this, revival depends on previous attention. We reproduce in the main only those partial aspects of the concrete experience which we have noticed at the time. The characters which we recall form a conceptual extract from the concrete whole as originally experienced. It is true that we think of the particular as being particular. But we are consciously unable to do justice to its particularity, to its concrete and fully determinate detail. The characteristics through which we represent it are contrasted as general with their particular embodiment in the fact we are trying to represent. But

even if ideal recall were more complete and determinate than it seems ever actually to be, there would still be nothing in the characters recalled capable of stamping the ideally represented object as a unique particular. It is always possible that these characters might also belong to other particulars, that they might be repeated in a plurality of instances.

For ideal representation all particulars are particularized universals. We cannot ideally represent any fact, thing, or event as particular and singular except by reference to something else which is already assumed to be particular and singular. This would lead to an endless regress, were it not that a final centre of reference is found in the present moment of consciousness. Whatever I think of as particular and singular is individualized for me by its continuous connection, however indirect and remote, with the here and now of my actual present experience.

CHAPTER XIII

LANGUAGE

Communication of Ideas. — One man, *A*, communicates his ideas to another, *B*, when he acts so as to prompt and enable *B* to represent ideally what he himself is thinking of or has been thinking of. Similarly, a man may be said to communicate his own ideas to himself when he acts in such a way as to prompt and enable himself to think again of what he has thought of before, *e.g.* when he makes a note for future reference instead of merely trusting his memory. Ideal communication in this wide sense takes many forms, of which language is only one.

Every material arrangement which has been purposely shaped by human beings so as to fulfil a plan forms a more or less permanent record of the trains of ideas of which it is the outcome. If I put my books and papers in order with a view to to-morrow's work, this prearrangement recalls to my mind, when to-morrow arrives, my preformed scheme. If, owing to interruptions, a week elapses before I can take up my task, the prearrangement of books and papers will still remind me of what I had intended to do, though without it my memory might have failed me, so that I should have been compelled to think out afresh a plan of procedure. When a man is engaged in constructing a tool or in building a hut or the like, his partially completed work prompts and enables him to rethink the thoughts which are embodied in it, and so to proceed both

with head and hands from the point where he previously left off, even though a considerable interval of time has intervened. If what he has already effected is destroyed, the restoration may require a renewal of mental as well as of bodily labor. Thus the material embodiments of ideal construction are means by which a person communicates his own ideas to himself. They are also means by which ideas are conveyed from one mind to another. In observing and using what the hands of his fellows have wrought, a man is prompted and enabled to follow out for himself the lines of thought which guided their actions. If he finds, let us say, an unfinished hut, he may understand the partially unfulfilled purpose which it embodies, and he may proceed to complete it according to the plan of the first builder, — a plan which may differ more or less from any that he would himself have independently devised. Similarly, if he finds some one actually engaged in building, he may enter into the other's ideas so as to coöperate in their fulfilment. Ideal communication of this kind is of enormous importance to the history of the human race. Mankind has gradually shaped the material environment so as to embody human ideas and fulfil human purposes. In a civilized country like England hardly a single object meets our eyes which is not more or less shaped or arranged by human agency in conformity with ideally represented plans. There is therefore hardly anything in our material environment which does not prompt and enable us to rethink the thoughts of our fellow-men. Houses, clothes, steam engines, corn fields, gardens, roads, knives and forks, loaves of bread, are all expressions and abiding products of trains of ideas which have been thought out by our ancestors, and in a far less degree by our contemporaries. They are the results of the coöperative thinking

and willing of the human race, and in learning to understand and utilize them we renew in ourselves the processes of ideal construction which they express. We enter into our spiritual heritage.

Such embodiments of ideal contrivance as we have hitherto considered are not primarily designed as means of communication. When a man builds a hut, his primary purpose is to obtain warmth and shelter, not to record his own ideas or communicate them to others. But there are cases in which communication is the principal end of our action. We may act with the express intention of directing our thoughts along certain lines or of making others think of the same objects which engage our own attention. This is so when a person ties a piece of string round his finger so as to remind himself of something which he has to do. He first attends to his proposed action in relation to the piece of string. He then ties the string round his finger so that it may be permanently present with him as a reminder. The string round his finger, so far as it fulfils its function, is a sign. A sign is some action or perceptible result of previous action expressly intended for communication of ideas to self or to others. We use a sign when we make a mark to show how far we have succeeded in throwing a stone or shooting an arrow. A milestone is a sign. So is a landmark to fix the boundary between adjoining estates, or a heap of stones meant to indicate the highest point on a mountain. Language is a system of signs, but one of a very peculiar kind. We have now to explain wherein its peculiarity consists.

Language. — To understand the nature and function of language we must bear in mind the general character of ideational process as concerned with universals. Language

is essentially an instrument of conceptual analysis and synthesis. Its function as a means of communication is essentially bound up with its function as a tool to think with, — an apparatus for directing and controlling the course of ideal representation. The several signs which compose a linguistic system are each connected with some universal aspect or feature of concrete experience. Each of them serves to fix attention selectively on this universal in distinction from the particulars which exemplify it, and to recall this universal whenever it is itself mentally reproduced or perceived anew. Thus language is an instrument of conceptual analysis. It is also an instrument of conceptual synthesis. For when a series of linguistic signs is either perceived or mentally imaged in appropriate order, attention is successively focussed on universals which supplement each other, uniting so as to form an ideally represented whole.

Suppose that I begin to name in a desultory manner the various objects which now fall within my field of view. I name successively grass, fields, daisies, trees, this house, that stream, the gate on my left. Each word as I use it fixes my attention on some partial feature of the total scene, and each of these partial features is a universal. There is no single word used by me which might not be also applicable to other particular objects of like nature. This holds true even of such terms as "this" and "that" or such a phrase as "on my left." "This" means "what I am pointing towards" or "what I am looking at," or "what I have just mentioned," or "what I am now interested in." But these relations to myself are of a general character. I may point towards, look at, mention, or be momentarily interested in many and various particulars. The word "this" does indeed direct my atten-

tion to some one particular thing. But it does not do so merely in virtue of its meaning as a linguistic sign. It does so because the circumstances under which it is applied are particular. My finger at this particular moment is pointing in the direction of just one particular cow and no other. Hence when I say "this" cow, I thereby fix my attention on the particular cow to which I am actually pointing. The general meaning of the word "this" is particularized by the particular condition under which it is used. The same holds good of proper names. Ultimately they apply to particular persons or places because they have been given to these persons or places under particular perceived conditions which restrict and determine their application.

The desultory naming of the features of a scene which is actually spread out before the eye is predominantly a process of conceptual *analysis*. As the basis and presupposition of the analysis there is indeed a synthesis. But the synthesis is perceptual. The whole within which conceptual aspects are distinguished is initially given in its concrete unity as a total scene presented to sense-perception. But if, instead of naming at random this and that object within the field of view, the spectator proceeds to describe what he sees in a connected way, his mental process is clearly one of conceptual synthesis as well as analysis. An ideal whole gradually develops before his consciousness through the successive combination of its conceptual components, each supplementing the others. This is still more evident if he subsequently describes the scene to another person who has not been present at it. In this case the speaker himself no longer has the help of actual perception, so that he has to reproduce his previous experience bit by bit through conceptual

synthesis. For the hearer the perceived whole has never existed; hence his entire view of it is a product of ideal construction. It grows up gradually in his mind through a process of conceptual synthesis, prompted and guided by the words which successively strike his ear.

The universals which constitute the meanings of words, and which unite so as to form a conceptual synthesis when the words are successively combined in connected discourse, are themselves to a very large extent products of previous conceptual synthesis. At the outset, indeed, conceptual process takes its point of departure from perceptual experience and the first universals in order of time are merely conceptual extracts from concrete data. But as ideal construction proceeds these universals are themselves submitted in a greater or less degree to conceptual analysis and reconstruction. The meanings of the corresponding words are characterized, described, or defined by combining other words representing universals of greater generality. Such words as dog, chair, orange, serve in the first instance merely to direct a child's attention to certain characters of perceived particular things which they possess in common with other perceived particular things. They stand merely for conceptual extracts from concrete experience. But later on the child is able in some degree to express what he means by them by using other words, without needing to point to concrete examples. He can say that an orange is a round thing with a yellow skin having juicy stuff inside it which is good to eat.

Such concepts as that of a dog, chair, or orange are primarily derived in an unanalyzed form from perceptual experience. So far as this is the case subsequent ideal construction only fulfils the function of making them articulate by definition and description. But it may also amplify the

concept by adding to it characters which have not been directly presented in perceptual experience. Thus the child may be told that oranges grow on trees. This becomes, for the future, part of what he means when he uses the word "orange." If he has never seen an orange tree with fruit on it, the characteristic of growing on trees has been incorporated in his concept of an orange purely by conceptual synthesis. Many concepts are wholly or mainly formed through conceptual synthesis with little or no basis in corresponding concrete experiences. Evidently, objects which are known only through the descriptions given by others are represented only by an ideal construction. Thus my conception of the great wall of China is entirely the result of an ideal construction made possible by the reports of travellers. The same is true of my conception of the ancient Britons, or of Julius Cæsar, or of the history of Jack the Giant-killer. All collective concepts which possess a high degree of complexity are mainly formed in this way. In the main the British constitution signifies for me the unified result of a highly complex conceptual synthesis. My experience of it in the concrete has been exceedingly partial and fragmentary. The same holds good for such collective concepts as that of the animal kingdom, organic life, the solar system, my friend Jones, the universe.

To sum up: As an instrument of thought, language fixes as permanent possessions of the mind the results of conceptual analysis and synthesis so that they may be utilized as occasion demands in subsequent ideal construction. As an instrument of communication it is the means by which an individual prompts and controls processes of conceptual analysis and synthesis in the minds of others. These two functions of language are intimately united and

interdependent. It is only in so far as man, by the use of language, signifies his own thoughts to himself, that he is enabled to make others think corresponding thoughts. On the other hand, conceptual thinking could not pass beyond a very rudimentary stage in the absence of such ideal communication between different minds as language alone makes possible. The development of ideal construction is essentially a social affair. *A* communicates a train of ideas to *B*; *B* further develops it in accordance with his own past experiences and the results of his own past thinking. In this way many minds coöperate in the formation of conceptual systems as if they were a single mind. Apart from such coöperation it may be doubted whether ideal construction could develop so far as to be of much service. It may be doubted whether it could be of much use to a solitary animal.

Language of Natural Signs. — It is only oral speech which can in strict propriety be called language. But by a convenient extension the term has come to be applied to other systems of signs fulfilling essentially similar functions. Thus we speak of written language, of the finger language of deaf-mutes, and of the language of imitative gestures.

The signs which compose a language in this wide sense may be of very various natures. They are more or less fit for their function according as they fulfil more or less adequately certain requirements. They are better adapted as vehicles of thought and communication the more uniformly and unconditionally they are producible at will independently of variable circumstances, the more easily and clearly perceptible they are when produced, and the more rapidly they can succeed each other without loss of dis-

tinctness. All these requirements are most adequately met by oral speech. Under normal conditions, a man is always able to utter articulate sounds at will. The sounds uttered are easily perceptible both to speaker and hearer, and they are distinctly apprehensible even when they follow each other with great rapidity. The manual alphabet of the deaf and dumb satisfies the same condition in a large measure, though not so completely. Written language is not so uniformly producible at will as oral speech. It presupposes the presence of writing materials. But it has the great advantage of not being evanescent. When once produced it persists as a permanent record, *Littera scripta manet.*

Our ordinary oral speech and writing and the artificial finger language which is taught to deaf-mutes, are all conventional systems of signs. The nexus between sign and thing signified depends merely on their conjunction in past experience, on their having been attended to together. Otherwise there is nothing in the nature of the sign itself tending to suggest its meaning. The sound of the word "cow" has no more intrinsic connection with the animal than any other sound. It is otherwise with what is called the language of natural signs or imitative gestures. A natural sign has some feature in common with what it represents, and it is this community of nature which primarily forms the link of connection between them. If I imitate the mewing of a cat, this tends to call up the idea of the animal, because the sound I make more or less resembles the sound cats make. Hence any person who had heard a cat mew might understand me at once. The word "cat," on the contrary, would be unintelligible except to those who had previously learned its application.

In all probability the most primitive form of language

was a system of natural signs, — of imitative gestures and sounds. It is hard to see how a conventional system could become established in the absence of a degree of mutual understanding and of insight into the nature of signs which already presuppose the use of some kind of language. But natural signs are under favorable conditions self-interpreting, and their first production is easily explained as a consequence of the tendency of vivid ideas to issue in corresponding movements.

The motor tendencies of ideas, in so far as they cannot take shape in practical adjustments, are reduced to movements of expression. The idea of eating will not enable a man to eat, unless food is within his reach. But he can at least place his hand on his stomach and imitate the movement of mastication with his mouth. Similarly, the idea of his own warlike prowess will not enable him to fight unless an enemy is at hand. But there is nothing to prevent his brandishing a weapon and going through the pantomime of fighting. Such imitative actions serve to sustain and develop the corresponding ideas, and they are at the same time a means of communicating these ideas to others. If a hungry man, *A*, is in presence of another man, *B*, who has a store of food, *A*'s idea of food will be an idea of food as coming from *B*, and in using imitative gestures he will endeavor to draw *B*'s attention to them. He will use them as means of determining the flow of ideas in the mind of *B*, and so of obtaining food for himself.

Natural signs fulfil the same essential functions as conventional signs, though far more imperfectly. They are instruments of conceptual analysis and synthesis. Each imitative gesture expresses a universal, and the combination of such gestures in a context expresses a synthesis of universals, each determining what is indeterminate in the

others. In this way prolonged descriptions and narratives are possible through natural signs alone, and there may be complex interchange of ideas between persons who have had no previous intercourse, and who possess no conventional language in common.

But imitative gestures have great and obvious defects as compared with purely conventional signs. It is possible to select at will the most convenient and manageable material for conventional language. Thus the articulate sounds of ordinary speech are both producible and perceptible with more ease, readiness, precision, and celerity than is possible in expressive pantomime. They are producible when the hands and the body generally are otherwise occupied; they are perceptible in the dark, and at a distance, when gestures appealing to the eye would be useless. Besides these external defects, natural signs labor under a more essential short-coming. They are incapable of expressing universals of a relatively high order of generality, — universals which come to be conceived through the farther conceptual analysis of the results of previous conceptual analysis. "To make," says Tylor, "is too abstract an idea for the deaf-mute: to show that the tailor makes the coat, or that the carpenter makes the table, he would represent the tailor sewing the coat and the carpenter sawing and planing the table." It is difficult or impossible to express imitatively what is common to all kinds of making in abstraction from what is specific in this or that kind of making. But if we use a conventional sign, such as the word "make," the difficulty disappears. Another allied deficiency of gesture language is its incapacity to furnish brief and compact expression for the unified results of prolonged and complex processes of ideal construction. Such a collective concept as that of the British Constitution

could not perhaps be expressed by mere pantomime at all. Certainly it could not be expressed by a single imitative gesture or by a short series of such gestures.

Owing to their superior effectiveness as vehicles of thought and communication, the conventional signs of oral speech have in the main displaced imitative gestures. Conventional systems are transmitted from parents to children; they represent in their structure and vocabulary the cumulative result of the coöperative thinking of many minds in the past history of the race. Every child in learning his mother-tongue assimilates in outline a whole system of conceptual analysis and synthesis, which has been gradually developed by the mental activity of past generations. I now proceed to give some indication of the mode in which children enter into possession of this spiritual inheritance.

Development of Language in the Child. — Long before the child begins to use or understand words, he acquires what we may call phonetic material, which is afterward utilized for the expression of thought. He exercises his vocal organs in the production of various sounds. At first this vocal exercise is purely spontaneous; but as time goes on, it becomes increasingly prompted and guarded by imitation. The earliest cries are primitive expressions of emotion and organic sensation, — hunger, fear, surprise, impatience, comfort, exhilaration. Vowel sounds such as *ah*, *oo*, *a* occur first; they soon become strung together in such series as *ai*, ā, *aw*, ă. The child lies on his back and crows. The vowel sounds then become combined with consonants so as to form syllables, *fra*, *ma*, *ba*. By the time this stage is reached, the continuous stream of babbling utterance is no longer expressive of special emotions or organic states. It is a favorite form of play. The

child rejoices in the sounds produced, and in his own power of producing them, and in the motor activity of larynx, tongue, and lips. Hence, he persists in his occupation for the sake of the pleasure it affords. He tends to repeat sounds which interest him; hence, the reduplications which form so prominent a feature of infantile babble. Through such spontaneous activity the power of producing a variety of syllabic sounds is acquired. This is the necessary basis and presupposition of the imitation of the sounds made by others. For imitation is only possible on condition that the imitator is already able to do something more or less similar to the act which he copies.[1]

Imitation is at first very imperfect. The sounds uttered by the child become assimilated to those which he hears only by a slow and gradual process. At first his imitative speech rather resembles his own spontaneous utterances than the words imitated. He simplifies complex sounds, saying *poot* for puss, *bik* for biscuit, *ka* for candle, *but* for butter, *hamfest* or *hanky* for handkerchief, *pinkle* for periwinkle. The reduplication of infantile babbling recurs and persists in the imitative stage. The child says *moo-moo* and *gee-gee*. Mothers and nurses have learnt to meet the baby requirements by using a traditional nursery language offering for imitation what experience of the past has shown to be most easily imitable.

Even before the imitative stage is reached, children show a certain understanding of words which they hear. But we must not assume that this "understanding" involves at the outset the proper use of verbal signs as expressive of ideas, — as instruments of conceptual analysis and synthesis. Suppose that a baby hears the word "mamma," and that in consequence he turns his head and

[1] See Chapter VIII, p. 82.

eyes until he sees his mother, and that then he stretches out his hands, smiles and crows. Exactly the same effect might have been produced by the sound of his mother's voice, by the rustle of her dress, by her touch, or by her appearance in the dim margin of his field of view. If it had been so produced the psychical process might have been merely perceptual in its character. It might have consisted merely in a motor reaction, prompted by a preformed association. This is the only legitimate interpretation when the child's general behavior indicates that its mental processes are mainly or wholly in the perceptual stage. Now, in the absence of other evidence, we have no reason to suppose that the sound *mamma* operates in any other way than the sound of the mother's voice, the rustle of her dress, her touch, or her appearance in the margin of the visual field. The mere fact that in the case we are considering the child's behavior is evoked by what for us is a *word*, really makes no difference. At a somewhat later stage, children spontaneously pronounce single words when they are attending to associated things, persons, actions, or situations. In itself this does not necessarily imply any essentially new development. The sight of an object may prompt the motor reaction of vocal utterance in accordance with a preformed association, just as it may prompt the motor activities of grasping and lifting to the mouth.

Such perceptual use and understanding of words is common among the higher animals, such as the parrot and the sheep dog. But the normal human child does not remain as they do, mainly or wholly on the perceptual level. There supervenes a stage in his mental history in which he becomes increasingly capable of distinguishing the universal from the particular, and of ideally representing absent objects by means of their universal characteristics. Lan-

guage then becomes the most important and indispensable instrument for developing this capacity. As the association becomes fixed between a name and certain features common to many otherwise variable objects, the child in pronouncing the name makes these common features, as such, emphatic and prominent in consciousness, in distinction from the concrete detail of perception. The name thus becomes an instrument by which he controls the direction of his own mental activity. The beginnings of this stage of development are manifested in his outward behavior. He repeats the name again and again in attending to the object with a zest and evident enjoyment sufficient to show that in doing so he is going through a mental operation of absorbing interest. It is a true "greeting of the spirit." When the child sees a caterpillar and calls it a pin, he thereby singles out and brings into the focus of attention the character in which it resembles a pin, — its similar relation to the act of picking up. Here we have in rudimentary form the peculiar analytic function of language. The use of the word breaks up the concrete content of actual perception into general or abstract features, and enables us to concentrate attention on these separately. To a certain extent of course selective attention of this kind may take place without verbal signs. But without such signs it can be only evanescent and fluctuating.

It is language alone which gives a permanent power of concentrating attention at will on *universal* features — features which could not be singled out by any adjustment of the organs of sense. When the milk in the bottle is all gone, when a flame is put out, when music ceases, when a drawer is closed, there is a certain common character belonging to all these experiences. They all involve the

peculiar experience of missing a continuation. But this character could not be marked off for separate consideration in a definite and permanent way without the use of language. The application of the name makes this possible. One child, for instance, used the word "atta," *i.e.* all gone, in these and similar situations. Hearing words applied by others has, of course, a like effect, and also a further utility. The child's thoughts are shaped and guided by others as he could not shape and guide them himself. The words which he hears lead him to discriminate conceptual features of a given situation which he would not otherwise have singled out for separate notice. All this happens when words are used in reference to particulars actually present to perception. The same words, when they are heard in the absence of the corresponding objects, will call up ideal representations; and their actual utterance or the mental imaging of them by the child will enable him both to call up ideas at will, and to fix and detain them as objects of attention.

The next step is the combination of words in a context so as to characterize a complex situation. Each word has its own distinctive meaning, and the meanings unite and supplement, and more or less modify each other, so as to form an intelligible whole. In this way the synthetic function of speech begins to base itself on the analytic. Probably the commencement of this development is found in the understanding of verbal combinations which the child hears from others, rather than in his own spontaneous utterances. I may refer to a very elementary illustration drawn from my observation of a child of my own. He had so far learned to understand the words "dada's nose" that he promptly touched the corresponding object when he heard them. He had learned, at least in a perceptual way, to connect the word "baby" with himself.

But when I asked, "Where is baby's nose?" he was at first either merely puzzled, or pointed to mine. At a later stage he not only distinguished baby's nose from dada's nose, but could readily understand when the respective noses of aunts, uncles, and other friends and relatives were mentioned. The word "nose" had then become for him the sign of a universal capable of having its meaning variously determined in varying verbal contexts. Very soon the child commences freely to combine words on his own initiative, so as to express conceptual synthesis. A baby begins by simply saying "baba" when he is sleepy, and "mamma" when he sees his mother. It is distinctly a new departure to say "mamma baba" when he wants to sleep in his mother's arms. At first these rudimentary sentences consist of only two words, *e.g.* "good bow-wow," "naughty bunny." Most often these simple verbal combinations are used where we should frame much more elaborate sentence-structures. But we must not suppose that the baby sentence is in reality the psychological equivalent of ours. The baby says "papa cacker" where we should say "papa has got crackers." He has distinguished and combined the concepts expressed by "papa" and "cracker." But we must not assume that he has distinguished the concepts which we express by "has" and "got" or by the combination "has got." So when he says "auntie cake" in presence of the fact that his aunt has given him a cake, we must not suppose that he really performs the conceptual analysis and synthesis corresponding to the missing words "has given me." Usually toward the end of the second year more complex sentences are framed, *e.g.* "Dada toe toe ba" — Father is to go and put his toes into the water, "Moo ku baby shee" — Baby sees moon in the sky.

Along with the increasing power of constructing verbal

combinations there is a corresponding increase in the power of interpreting the language used by others. It is most important to note that in this process the child is perpetually learning to understand unfamiliar words and to attach more correct and precise meanings to those which are relatively familiar. What others say is often couched in terms which his previous experience makes only partially intelligible. To the meaning of some words he has little or no clew, or a wrong clew from previous acquaintance with them. But the words he does understand suggest an ideal construction which invests the others with meaning. He interprets them by their context as we may interpret occasional words which we do not know in reading a foreign language. The results thus obtained are continually being sifted, and either corroborated or modified or annulled by the reception which his own application of language meets with from others. Sometimes his use of words and phrases gains him wondering admiration; sometimes it excites laughter. Sometimes he fails to make himself understood at all; sometimes his mistake is formally pointed out and the right language suggested to him. Thus by a process of constant experiment with varying successes and failures, he gradually masters his mother-tongue and the system of conceptual analysis and synthesis which it represents.

CHAPTER XIV

THE WORLD AND THE SELF AS KNOWN THROUGH IDEAL CONSTRUCTION

Self-consciousness and the consciousness of an external world develop concurrently in the most intimate union and interdependence. There is a constant and continuous give and take between them. Each is perpetually borrowing of the other and repaying the loan with usury. This is true at the perceptual level. The inner being of external things is apprehended only as a counterpart of the percipient's own subjective experience. On the other hand, it is only in contrast with external things and in relation to them that he becomes distinctively conscious of self. Self-projection is a condition of self-consciousness. When we turn from perceptual process to ideational we find this interdependence of self-consciousness and world-consciousness assuming indescribably complex and varied forms. The growth of the individual's acquaintance with the external world is in itself an extension of his own being — a development of the object of his own self-consciousness. As his knowledge of his material environment becomes more and more extensive and systematic, his control over it becomes greater and his interest in it becomes progressively more varied, more comprehensive, and more highly organized.

But all this could not take place through the individual's own unaided efforts. The ideal construction through which

the external world becomes known is a social function. Many minds coöperate in the process and have a joint property in the product. All progress in such coöperative thinking and willing involves progress in mutual understanding, sympathy, and interest. This again essentially implies a further development of self-projection. Each individual can only represent to himself the thought, perceptions, emotions, desires, volitions, etc., of his fellows by reference to his own subjective experiences. He must interpret the manifestations of their mental life by conceptual analysis and reconstruction of the material supplied by his own mental life. In this process his own self-consciousness inevitably becomes more and more definite and distinct. He comes to know himself in learning to know others. Further, this consciousness of self is always the consciousness of a socially related self. The individual not only becomes aware of resemblances and differences between himself and others; he becomes aware of himself as related to others in the social unity of coöperative thinking, willing, and acting. His own thoughts, volitions, and actions appear to him as fragmentary portions of a whole, depending for their meaning and efficiency on their relation to thoughts, volitions, and actions of others. His view of the attitude of others toward him, what they think of him and expect from him, and how they feel in relation to him, becomes an integral part of his own self-consciousness. There is thus progressively developed in him a vast range of organized interests having for their object the psychical life of his fellow-men. This again constitutes an extension of his own being. His social interests are indeed the most important part of himself.

To trace in detail the correlated development of self-consciousness and consciousness of the external world is a

task which vastly exceeds our limits. We must be content to note only certain points of special interest. In doing so it will be necessary for purposes of exposition to deal separately with aspects of the total process which are in fact inseparably united.

General Nature of Antithesis between Self and External Reality at the Ideational Level. — The distinction between self and external object as it exists for ideal representation partly falls within the process of ideal construction itself and partly consists in a contrast between idea and percept. The case of practical contrivance is typical and of primary importance. In practical contrivance we endeavor to construct an ideal bridge between our present situation and a desired result. Our interest demands that the bridge shall be such as to bear us to our destination when we actually come to use it. But this is possible only so far as our ideal construction conforms to an ideally represented reality which is beyond our control. Just as motor activity in perceptual process can only attain success by adjustment to perceived conditions, so practical contrivance essentially involves adjustment to similar conditions as ideally represented. In forming our plan of procedure we have to conform the course of our thought to the ideally represented combination of circumstances constituting the preëxisting situation — to the ideally represented changes in this situation which we foresee as consequences of various possible modes of behavior on our part. Whatever in fact would hinder or facilitate the body's power of action in executing a plan also hinders or facilitates so far as it is ideally foreseen, ideal construction of the plan. In attempting to escape from a prison a man may be actually stopped by a wall which he cannot climb. In framing a

plan of escape, the thought of the high wall will block the flow of ideal construction just as its actual presence would block the course of motor activity. In actually attempting to escape, the discovery of a ladder might overcome the obstacle presented by the wall. Similarly, the obstacle to ideal construction presented by the thought of the wall might be surmounted by the ideal anticipation of finding a suitable ladder in an accessible place. On the perceptual level the externally real consists in perceived conditions to which motor activity must adapt itself if it is to be efficient in the attainment of its ends. In ideal prearrangement of future action, the externally real consists in ideally represented conditions of analogous nature, to which the flow of ideal construction must adapt itself in order to be successful. On the other hand, whatever either in perceptual or ideational process is merely dependent on subjective initiative is to that extent not regarded as belonging to the external object. On the perceptual level whatever variations of our sense-experience are uniformly producible at will by free motor activity, are so far referred to the self rather than to the not-self. Similarly, the flow of ideal representation is regarded as a process in the self, so far as it depends merely on subjective interest working through the mechanism of preformed associations. Thus in practical contrivance, the pursuit of the end is a process of our own minds depending on our interest in a desired result. It is we who are forming a plan. It is our preformed associations and present interest which determine the successive recall and disappearance of ideas in a train. It is we who try this and that ideal combination in turn though we have to test them by reference to conditions which we think of as determined for us and not by us. But even the act of submitting to this test is ours. We submit ourselves to it because of our interest

in the end which we are pursuing. It is we who seek for the objective control proceeding from the nature of the ideally represented facts, and in so far as we fail to find it we are baffled. We are active in order that we may be passively determined, and we can be passively determined only in so far as we are active. The whole process is one of interaction between subject and object. The subject experiments in the way of ideal construction, but it is the object which determines the result.

Besides this antithetic correlation of self and the externally real within ideal process, ideas, as such, are contrasted with perceptual experience as belonging more distinctively to the self, — as involving a less direct relation to external reality. In discussing the perceptual consciousness of self and external object we saw that the line of demarcation between them comes to be drawn at the surface of the body. The skin and what lies inside it is apprehended as belonging to the self; what lies outside it is apprehended as not-self. Now ideational process occurs independently of the actual presence of external things in perceived relations to the body of the percipient. We can ideally represent what is absent in space or past in time. Perception ceases when we go away from the thing perceived or turn our sense-organs in a different direction. But we can, so to speak, carry our ideas about with us, wherever we go. They are independent of the changing spatial relations of outside things to our bodies. On the other hand, ideational process is positively continuous with bodily experience; it is connected with various phases of emotion and the attendant organic sensations; it occasions varying tension and relaxation of the muscles and varying movement of expression or of practical activity. Thus it comes to be regarded as a process going on inside the body independently of the

changing environment. It comes to be regarded as a process taking place in the self apart from external things. By a metaphor which common sense is prone to accept as literal fact, what is ideally represented is looked on as a mere copy of the external thing taken from the perceived original.

The same result is also reached in another and even more important way. In practical contrivance and in the pursuit of knowledge through ideal process we seek for objective control from the ideally represented objects. But in many respects this objective control is accorded to us in a comparatively imperfect measure, so long as we confine ourselves to ideal representations. We put questions to which we can obtain no decisive answer with the data at our disposal.

In planning to escape from a building in which he is imprisoned a man may ask in vain whether he will or will not be able to climb the outside wall, whether he will or will not be able to find a ladder. In the actual execution of his ideal scheme these doubts are settled. What was indeterminate for ideal construction is unambiguously fixed in the corresponding perceptual experience. But perceptual experience not only yields fresh data which settle questions otherwise unanswerable; it may also yield fresh data which are inconsistent with the results of ideal construction. The best laid plans may fail when they are actually tried. They are always liable to break down, owing to unforeseen circumstances. The prisoner may be proceeding on the assumption that once he is over the wall he will have no further difficulty. In *fact*, he may find his escape barred by another wall or by men keeping guard. Where such conflict arises between perception and idea, it is of course the ideal representation which must give way. Ideal construc-

tion which seeks to know external reality may transcend perceived facts; it may extend knowledge beyond the limits of what is perceptible by the senses. But it defeats its own end if it contradicts perceptual data; for it is ultimately founded on perception. Its materials are drawn through conceptual analysis from the concrete content of perceptual experience, and its function is to connect detached data of perception in a system through a process of conceptual synthesis. If the data refuse to take their place in the system, the ideal construction so far fails and must be remodelled. Hence the continually recurring discrepancies between ideal anticipations and corresponding perceptions lead us to regard ideal representation as relatively unreal. We contrast our opinions, expectations, hypotheses, conjectures, as possessions of our own minds, with what we call the facts of actual experience as something independent of us.

It is now time to call to mind what we have been disregarding — the fact that ideal construction is a social function and not the work of the individual in isolation from his fellows. The perceptual data which it utilizes and unifies are given to many minds, and many minds coöperate in the process of unification. Our next step will be to discuss the psychology of social communion, or of intersubjective intercourse as it has been called. We shall then consider more specially its influence on the development of self-consciousness and the consciousness of the external world.

Growth of Intersubjective Intercourse. — From the first there is a marked difference between the child's relations to persons and his relations to inanimate things. It is not merely that the bodily appearance and movements of other

human beings resemble his own. What is of even greater importance is that their behavior is connected in an altogether peculiar manner with the furtherance and hindrance of his interests. In general, inanimate things do not spontaneously change so as to adapt themselves to his needs and requirements or to interfere with his actions. In order to make them subservient to his will when they are not so already, he must control them by active movements in the way of direct or indirect manipulation. He must come in contact with them and put forth effort against resistance. But the behavior of nurse and mother spontaneously adapts itself to the child's varying wants and impulses without having to be controlled in this way. The baby may stretch his hand toward his rattle, but if it is not within reach, it does not move toward him and place itself in his hand of its own accord, however much he may cry. But if the nurse is present, she may bring it to him. Her action thus fits in to his as its continuation and completion. Grown-up persons are perpetually intervening to satisfy requirements which the child cannot fulfil at all, or can only fulfil in part, by its unaided activity. From early infancy the unpleasant sensations arising from tight and damp clothes, from cold, hunger, and indigestion, are continually being removed by nurse or mother. They are also constantly doing things to amuse or console the baby, making noises for it, singing to it, fondling it, seeking to direct its attention to attractive objects, playing peep-bo, rolling balls, etc.

As the child's activities become more varied and complex, he meets with more varied and complex coöperation in them from his social environment. He finds others constantly intervening to help him, and he learns to seek their intervention and to count on it. The means which prove effective in influencing their behavior and gaining

their assistance consist precisely in such actions as have no effect on inanimate things. He may get an apple peeled by pushing it toward his father or mother, but not by pushing it toward the knife. In general, it is just at the points where he finds himself impotent to attain his ends by manipulation or analogous action on external things, that other persons intervene to supply what is wanting to continue and complete his otherwise unavailing efforts. When he is beginning to learn to walk, his mother catches him just when he would otherwise fall. At a certain stage of development, he takes an almost inexhaustible pleasure in letting things fall on the floor. But he cannot pick them up again, and therefore without assistance this amusement would be soon cut short. It is the nurse who picks up the spoon or rattle and restores it to him after each fall. Her action is not his, but it is the complement and continuation of what he does himself, the complement and continuation required for the fulfilment of his interest. It is what he would do for himself if he could.

Under such conditions, the child must interpret the behavior of others as expressive of a subjective experience like his own. In merely affirming so much, however, we give an utterly inadequate statement of the nature of his social consciousness at this stage. As he finds and seeks and learns to count on social coöperation, he not only becomes aware of others as having perceptions, ideas, and interests like his own; he becomes aware of them as perceiving, thinking about, and interested in the things which he himself perceives, thinks about, and is interested in. Further, he becomes aware of them as cognizant of and interested in himself. He becomes aware of them as concerning themselves with his own wants and requirements, and coöperating with him for their satisfaction. Only so far

as he thus learns to interpret the behavior of his social environment, will he be able to adapt himself to it, and utilize it in the furtherance of his own aims and purposes. Thus the primitive tendency to regard external things as having an inner being which is the counterpart of our own subjective life, finds in social intercourse a unique field for its development. With this development of social consciousness a most important group of interests grows up and progressively increases in range and complexity. The child becomes more and more interested in the interest which others take in himself, how they feel toward him, what they think of him, and so on. He looks constantly to his social environment for sympathetic appreciation and sympathetic coöperation; he fears and shuns disapproval and opposition from it. Besides this, he becomes more and more interested in the psychical life of others and their social relations without any special reference to himself or to his own private ends.

Intersubjective intercourse can only exist in a rudimentary stage before the growth of imitation and of language as the vehicle of ideal construction and ideal communication. After what has been said in the last chapter only brief reference is required to the exceedingly important part played by language. The child can follow up his own trains of ideas only by help of ideas suggested to him through the words of others, and it is only by expressing his own thoughts in language that he can elicit from them the required expression of theirs. Thus he is always virtually or expressly asking questions and getting answers. The answers are not of his own making; yet they are answers to his own questions. They can only be regarded by him as coming from another mind which is not only thinking of the same things he himself is thinking of, but is

also thinking of his thoughts concerning these things. At first his part in this interchange of ideas is mainly passive. But he soon begins to give as well as take. He answers questions as well as asks them, imparts instruction, suggests lines of action, explains difficulties, etc. He thus becomes increasingly aware of others as dependent on him for the development of their trains of thought, just as he is dependent on others.

As regards imitation, the main point to be noted is that we cannot know what it feels like to perform an action except in so far as we have performed more or less similar actions ourselves. Thus in imitating what others do we obtain the means of interpreting their outward behavior as expressive of their inner experience in the way of cognition, feeling, and emotion. A child sees his nurse throw a ball and attempts to do the same thing himself. So far as he is successful he has lived through the experience connected with the act imitated. Hence, when he again perceives his nurse throwing a ball, her outward behavior has for him a new significance. He knows what his nurse feels like in throwing a ball, because he has thrown a ball himself. From the close of the first year imitation plays a progressively larger part in the activity of the child, until a stage is reached in which it pervades almost his whole behavior. Nearly all childish plays bear this character. A little boy will push a chair before him as a puff-puff, at the same time puff-puffing himself. He will mimic his father smoking a pipe, or the movements of his mother playing a piano. He will use a playmate as a substitute for a horse, and provide substitutes for whip and reins. He will array tin soldiers against each other for battle. The little girl will dress and undress her doll, feed it, scold it, slap it, fondle, put it to bed, soothe it to sleep, take it out in a

perambulator, and so on. Such imitative activity enables children to enter into and appropriate the experiences of others. A little girl, for example, in fondling or scolding her doll comes to know what it is like to scold or fondle, as she already knows what it is like to be scolded or fondled.

It is not easy to overestimate the importance of imitation as a method by which the individual gains relatively definite and vivid insight into what goes on in the minds of others. But we must never forget that it is only one phase or aspect of a very complex process. Imitation is in the main only significant because of its intimate union with social coöperation in thinking, willing, and acting. Coöperation is essentially different from mere imitation. When *A* socially coöperates with *B*, it is by no means necessary that *A* shall do or attempt to do what *B* is doing. On the contrary, in the more typical and important cases, *A* does or attempts to do something different from what *B* is doing. He acts in a way which is complementary to the act of *B*. He plays not a similar *rôle*, but a corresponding *rôle*. Now the imitation of children, where it is most important for mental development, has a certain dramatic character. The child in imitating enacts a distinctive part, and presupposes that others are enacting correspondingly distinctive parts in the whole constituted by a certain social situation. Sometimes the part assigned to others is merely that of interested spectators, who are expected to encourage and applaud, or, it may be, to disapprove or forbid. But in most cases more definite coöperation is required. When a baby begins alternately to cover and uncover his own face as he has seen his nurse or mother cover and uncover hers in the game of peep-bo, his behavior is so far merely imitative. But he is not content with this. He also expects the mother or nurse to make appropriate

noises, and to look duly surprised and pleased at the right points. Thus, in this novel way of playing peep-bo, he obtains a new insight into the inner experience of others, not merely as being like his own, but as the necessary complement of his own — as connected with his own in an inseparable unity. It is significant that children in imitating show a strong tendency to interchange *rôles* with their elders — to do to others what has been previously done to them, to become relatively active in situations where they have in the past been relatively passive. To begin with, it is the nurse who picks up what the child drops or throws down. But as he becomes able to run about and to pick things up himself, he begins to find pleasure in fetching and carrying for others. He will bring back the ball to the nurse in order that she may throw it again. At the dinner table he will hand or carry forks, spoons, apples, and biscuits to his father and mother. In playing with such toys as stuffed animals or tin soldiers, he will assume an attitude of authority, controlling their actions, approving and scolding, and commanding and forbidding, and in general subjecting them to his will as he himself is subjected to the will of his elders. He behaves in the same way toward children younger than himself. In this his social consciousness receives new developments which it could not otherwise acquire. He comes more and more to represent the mental life of others as depending on his own as well as his on theirs.

In the more complex and developed dramatic play of children, the dramatis personæ are not, as a rule, actually present. They are represented by a process of ideal construction, assisted and sustained by what R. L. Stevenson calls "lay figures" and "stage properties." The doll is a centre of reference, which permanently supports the ideal

representation of the life history of a baby, and at the same time supplies that concreteness and vividness which is wanting in the mere idea. The girl, in playing with the doll, treats it ideally, and so far as possible, actually as if it were a baby. She imaginatively places it in varying social situations relatively to herself, and invests it with appropriate emotions, wants, perceptions, and modes of behavior, and represents herself as feeling and acting toward it in corresponding ways. Evidently this free ideal construction of social situations must greatly help to enlarge and deepen social insight. The materials for it are primarily derived from the child's own social experience. But in the constructive process he or she acquires a mastery over these materials in the way of conceptual analysis and synthesis such as could not easily be otherwise attained. Later on the raw material of ideal construction is partly derived from books and similar sources. So far as this is the case, the playful drama gives concrete vividness and detail to ideas which would otherwise be relatively vague and schematic.

Intersubjective Intercourse and Self-consciousness. — The development of social consciousness is inseparably one with the development of self-consciousness. The individual's interpretation of the behavior of others is ultimately based on his own subjective experience. Hence, in dealing with them he is continually led ideally to analyze and reconstruct his own mental life. Besides this, in every typical social situation he is aware of others in relation to himself and of himself in relation to others. The conception of self so formed essentially includes relation to other selves. It is a conception of the part played by the self in the coöperative union which constitutes society. In thinking of ourselves

we think of the attitude of others toward us and of our attitude toward them, of what we and they think of each other, expect of each other, feel toward each other, etc. Ask any man who he is and he will reply by describing his social position, by referring to his profession, the family to which he belongs, and any deeds or intentions of his which have a social significance. It is in society that we live and move and breathe and have our being. If we disregard all qualifications of the self which presuppose social relations, it is not too much to say that all that constitutes distinctively human self-consciousness disappears.

As the social situation varies, self-consciousness undergoes corresponding transformations. When we are commanding, instructing, or advising, we are aware of ourselves as relatively superior, as initiating, continuing, and developing trains of ideas and actions in the minds of others. When we are receiving commands, instruction, or advice, we are aware of ourselves as relatively inferior, as having our thoughts and actions determined by the thoughts and actions of others. It is a different self we are conscious of when we are giving protection or consolation and when we are protected or consoled. It is different in the family circle and in the office. It is different according as we are dealing with friends or enemies. The boy's self-consciousness varies according as he is playing with his big brother or his little brother.

The function of imitation in the development of self-consciousness is exceedingly important, especially in its earlier stages. While the imitative endeavor is as yet unfulfilled, the experiences connected with the action to be imitated are as yet beyond the reach of the imitator. They are for him something relatively vague and mysterious. The conception of himself includes a contrast between what

he actually is and does and what he is trying to be or do; and this contrast is one between himself and the person to be imitated. So far as the imitative endeavor becomes successful, the situation is changed in a twofold way. By the same process the individual acquires the power of entering into sympathetic communion with another self, and also in the same act develops and enriches his own self-consciousness. A young child sees his mother throw a ball, and he says, "Baby frow ball." The ball is given to him, and in his fashion he throws it. He again says, "Baby frow ball." But now the words have for him a new significance. "Baby" is a triumphant baby, able to throw balls. He next carries the ball back to his mother and says, "Mamma frow ball." His mother's throwing the ball has now a new interest and significance for him because through his own experience he has come to know better what she feels like when she throws it.

We must however remember that imitation is mainly important in connection with social coöperation. The child's consciousness of a triumphant self is largely relative to the sympathetic interest which it seeks and obtains, or perhaps fails to obtain, from its mother. In this respect those imitations have a peculiar importance in which children interchange the parts previously played by themselves and others, becoming relatively active where they had been relatively passive. In this way the child contemplates its own mental life reflected in that of another self, as it may see its own body reflected in a mirror. From the end of the second year, or even earlier, children imitatively assume attitudes of authority toward such toys as dolls or stuffed animals. The doll is put to bed and obliged to go to sleep. If it does not go to sleep there are disapproving guttural noises imitated from the nurse. Later on the naughty

doll is put in a corner as punishment. In fact, the little girl treats her doll just as she has been treated herself by those exercising authority over her, and represents it as behaving much as she herself behaves in like circumstances. Thus in imaginatively investing it with a life history she ideally represents her own life history, so to speak, externalized and transferred to another self. She becomes conscious of herself in another. On the other hand, in enacting the rôle of nurse or mother toward this counterpart of herself, she becomes self-conscious in a different way. She becomes conscious of herself as one exercising sway and authority.

Intersubjective Intercourse and the External World. — The development of intersubjective intercourse not only involves a progressive enlargement and transformation of self-consciousness. The same process is in another aspect a progressive enlargement and transformation of the consciousness of the external world.

We saw that on the perceptual level variations in sense-experience which merely arise in connection with the changing states and positions of the percipient organism, tend to be referred to the embodied self rather than to the external thing in which it is interested. This distinction becomes more precisely defined with the growth of intersubjective intercourse. The way in which this takes place is easy to understand. Two persons, *A* and *B*, are in presence of the same external object, *O*. *B* examines *O* from various points of view, walking round it, toward it, and away from it. Again, he turns his eyes from it, or turns his back on it, or gets behind something which intercepts his view of it. Perhaps he puts on a pair of spectacles, or looks at it through a piece of colored glass.

All these movements of *B's* body are observed by *A*, and *A* knows through the analogy of his own case and through the words and behavior of *B* that they involve a series of changes in *B's* experience in relation to *O*. Yet *A* can detect no corresponding variations in *O* itself. Similarly, if *B* goes away altogether, *O* remains unaltered. The changes in *B's* experience of *O* must come to be regarded by *A* as not involving changes in *O*, but only in its appearance to *B*, including the case of its complete disappearance. In this manner there arises a sharp distinction between what depends merely on the varying conditions of the perceptual process and of cognitive process in general and what belongs to the nature of the external thing as an independent reality. If we look at the moon through a telescope after looking at it with the naked eye, we do not suppose that the change in the visible appearance is a change in the moon itself. The moon does not really become larger or acquire new features. On the other hand, the details discernible through the telescope and undiscernible with the naked eye are regarded as really belonging to the moon. The reason of this is that the differences discerned appear under uniform conditions of perception. The conditions of perception being the same cannot account for the differences in what is perceived. If the same telescope is turned upon other objects, other features are discernible. Should it happen that similar details are recognizable, whatever the object observed, we examine the instrument to see if it is dirty, or to find some other condition affecting it and not the things viewed through it.

The distinction between what is observed and its appearance to the observer tends to be represented after the analogy of a material thing and its reflection in a mirror, or of an original and the copy of it. The self, as we have

shown, comes to be regarded as forming a continuous unity with the bodily organism. Hence there arises a tendency to confuse presence to consciousness with local presence inside the body. Now when a man sees a stick raised to strike him and runs away in consequence, evidently the stick itself is not inside him. On the contrary the stick itself is seen to be outside him. What is supposed to be inside him as the immediate object of his perception is a picture, or image, or vicarious representation of the stick. The same view is still more strongly suggested when something beyond the range of perception is present merely "in idea." This analogy of reflection in a mirror, or of original and copy, is fundamentally vicious, involving the literal application of a mere metaphor. It has passed from popular thinking into the writings of philosophers, producing endless confusion in the theory of knowledge.

The point on which we have so far dwelt is the effect of intersubjective intercourse in determining the distinction between what is merely due to the varying conditions of cognitive process and what belongs to the nature of the external object. But there is another and an immensely important way in which social communion yields a test of what is physically real as distinguished from mere appearance. That and that only comes to be regarded as externally real which is equally perceptible to all members of society under like conditions. The external world is the essential medium of social coöperation. Different minds are enabled to unite in conjoint activity for the fulfilment of a common purpose only in so far as each recognizes that the others perceive and think of the same objects as himself. Hence the more extensive and effective intersubjective intercourse becomes, the more pervasive and fixed is the view of external reality as something to which

all minds have access in common. Thus, the individual member of society habitually thinks of the externally real as that which exists or would exist under like conditions for others as well as for himself. What does not exist for others as well as himself, under like conditions of perception, he generally regards as mere appearance, as fancy, illusion, or hallucination. Failure to recognize this test is usually a symptom of insanity, disqualifying the individual from fulfilling his part in the social order. I see what I take to be a man, but others looking in the same direction do not see anything at all. I infer either that the visual appearance is mere hallucination or at any rate that it is not connected with the presence of an actual external object such as I supposed. If I persist in saying that there is really a man there, my friends will send for a doctor and are likely to end by shutting me up in a lunatic asylum. This reference to other selves pervades our whole attitude to the external world. When it is not expressly formulated it is always lurking in the background of consciousness as a latent assumption or presupposition. "We are walking, let us say, in a village street, looking idly about from stone heap to passing carriage, gaunt telegraph pole, and gabled house. We are not conscious of any person, yet we vaguely realize that this is a shared, a common, a public experience, not a private one, that the other people, actually or conceivably present, are [or might be] seeing the same sights, house and carriage and stone heap."[1] If any part of the scene specially interests us, we may begin to talk to a by-stander about it, assuming that he has perceived it or can perceive it as well as we; and we do this without being aware that we are making an assumption at all.

[1] "Introduction to Psychology," by Mrs. Calkins, p. 172.

Finally, the development of coöperative thinking and willing gradually gives rise in the history of the race to the mechanical view of nature displacing the primitive anthropomorphism which tends to attribute psychical life more or less determinately like our own to all external things interesting enough to attract special attention. This transformation is due in the first place to an increasingly sharp and impressive contrast between inanimate and animate things. Bodies which behave in such a manner as to make possible social coöperation, become more and more distinctly marked off from those which do not adapt themselves to the social order. A widening and deepening knowledge of the material world does nothing to verify the anthropomorphic point of view, which endows rocks, trees, streams, cataracts, etc., with a mental life like the human, and capable of being similarly influenced. On the contrary, growing acquaintance with human conditions on the one hand and external nature on the other shows more and more clearly that such things are in no sense in social relation to us, and that to treat them as if they were so, is practically futile and misleading. It is, above all, progress in the industrial arts which brings about this changed view of the external world. As man's control over his physical environment increases, he comes more and more to regard material things not as having an independent psychical life of their own, but rather as means and instruments for the fulfilment of human purposes. He comes to regard them as relatively passive tools. The clay cannot say to the potter, Why hast thou made me thus? The old anthropomorphism decays, and as it decays it becomes displaced by a new anthropomorphism which is fitted to stand the test of experience. Material things still in a sense appear as manifestations or vehicles of psychical life, but this psychical

life is that of the human beings who adapt them to fulfil human ends in the coöperative union of society. A railway train is an expression of thought and will, but the thought and will expressed in it are the thought and will of its inventors and makers, of the capitalists who invest in it, and of the public who use it. This is the way in which we regard it whenever we consult a Bradshaw or take a ticket at a railway station. To understand the full importance of this point of view we must try to realize in how thoroughgoing a way civilized society has mastered its material environment and reshaped it for the satisfaction of its own needs. Wherever we turn our eyes, we are constantly confronted with external embodiments of human will and intelligence. We must go to the wild moorland or the lonely mountain side to find mere nature, and even there we do not quite succeed.

In all this rearrangement and remoulding of the external world, so far as it is efficient, primitive anthropomorphism yields no help except accidentally. All depends on discovering certain rules or laws of interaction which have no reference to an inner psychical life in material things. The point of view which proves efficient in the long run is the mechanical. In order to succeed, man must concentrate attention on those modes of behavior of external things which make machinery possible.

This view of external nature arises first in connection with practical contrivances as embodied in tools, utensils, weapons, machines, and similar arrangements. But as it becomes more and more predominant in human thought it receives another application. It is applied theoretically in order to interpret and explain natural processes as they take place independently of human action. The tendency is to regard the external world in general as if it were a mechanism

analogous in its working to mechanisms of human construction. Modern science has achieved its successes mainly on these lines. It has made a strenuous effort to interpret even vital processes purely from the mechanical point of view.

What we have said about primitive anthropomorphism and its decay refers to the history of the race. In the case of children also there is discernible at a certain stage of their development an anthropomorphic tendency comparable to that which is common among savages. But the civilized child is from the outset placed in a social environment which discourages and suppresses such modes of thought. Hence they last only for a comparatively brief period, and in some instances their presence is hardly in evidence at all. A little girl of three or four years may cry when she sees a flower plucked because she represents it as feeling pain. Childish grief over a broken toy has often an anthropomorphic element. But some children seem scarcely to pass through the stage at all. They find everybody around them acting and speaking as if plants and inanimate things do not feel what happens to them. Hence they rapidly learn to regard them in the same way.

In conclusion, it is necessary to guard against a misconception. We have described the decay of the uncritical anthropomorphism of the savage and of young children. But it must not be supposed that the projection of the self, which is a primary condition of our apprehending the externally real at all, ever entirely disappears, at least from ordinary thinking. On the contrary, it is implied in a modified and attenuated form, whenever we speak of things as exerting force or offering resistance, as pushing, pulling, or pressing, as in states of strain or tension, or as acting and being acted on. It is implied in our ordinary conception

of things as actually existing and persisting with a unity and identity of their own independently of the vicissitudes of our sense-experience. It is a question for Metaphysics whether this subjective element is capable of being eliminated, and whether it ought ultimately to be eliminated from our view of the external world. The present writer thinks not. To get rid absolutely of what is due to the projection of the self would be to kill the goose that lays the golden eggs.

CHAPTER XV

EMOTION

In preceding chapters we have mainly considered the development of cognition. We have indeed never lost sight of the concrete unity of mental life as involving an inseparable connection of conation, feeling-attitude, and intellection. None the less our treatment has been one-sided. For we have referred to interest mainly as a factor in the processes of perceptual adaptation and ideal construction. We have not expressly discussed the way in which the various forms of interest themselves become differentiated and organized. It is now time to take up this problem. We have in what follows to deal with the same concrete process of development which has hitherto occupied us. But we have to deal with it from a different point of view. We have now to regard the growth and differentiation of cognitive apprehension merely as a factor in the growth and differentiation of conation and feeling-attitude, instead of regarding interest as merely a condition of the development of cognition. Our first step will be to consider the special emotions and the conditions under which we become capable of feeling them. For it is the endless diversity of emotional states which gives its variety to our subjective life, playing in it a part analogous to that played by sense-presentation in cognitive process.

General Nature of the Emotions. — Every distinctive type of emotion has its own peculiar quality which is incapable

of being further analyzed. In order to know what anger is we must feel anger ourselves, just as we can only know what the sensations of red or blue are by ourselves experiencing them. This does not imply that emotions are absolutely simple states which do not at all admit of analytic description. It implies only that they can never be resolved without remainder into a combination of more elementary constituents, otherwise known outside this combination. An emotion may include within its unity a complex of emotional states as its components. But it can never be simply equated to these ingredients which enter its composition. It includes them, but it is not simply identical with them. Jealousy may include in intimate union anger, wounded vanity, grief, tender reproach, and a variety of other emotional ingredients otherwise known than in this combination. But all these taken together do not of themselves make up the peculiar experience of being jealous. They no more do so than the taste of sugar and the taste of coffee make up the peculiar taste of sweetened coffee. The blend in both cases has a distinctive quality of its own. The first general character of the various kinds of emotion which we have to note is that however composite they may be they each contain as unifying centre of the complex a unique and irreductible element.

In the next place, it must never be forgotten that emotions are subjective attitudes toward an object. To be angry is to be angry with something or somebody, to be grieved is to be grieved over something, to fear is to fear something, to be joyful is to rejoice concerning something. The object may be vague and indeterminate. But there is always a tendency to specialize it. The emotion tends to define itself by fastening on determinate

objects. A person in a bad temper will find special occasions for feeling cross, angry, or fretful in occurrences which would not have affected him at all or would have affected him agreeably in a more complacent mood. Joy, however it may arise in the first instance, involves a predisposition to be pleased with things which would otherwise have left us indifferent or perhaps annoyed us. The jealous person finds food for his jealousy in all kinds of circumstances which would not have excited such an emotion had it not previously existed. To be in a hopeful mood is to look on the bright side of things, and to be in a despondent mood is to look on the dark side of things. The same emotion may in this way transfer itself successively from one object to another. The servant who resents being scolded by her mistress is apt to vent her ill humor on her own subordinates. We are often cross with one person, *A*, simply because we have been vexed by another, *B*.

Finally, the typical varieties of emotion are each connected with certain characteristic directions of conation — trends of activity. Anger involves a tendency to destroy and forcibly to break down opposition. The angry man is one who would like to kick somebody or something. Joy involves what we may called expansive activity. It brings a heightened zest for such movements of attention and modes of behavior as are not intrinsically painful and do not involve strain and effort. Thus it is characterized by a playful attitude. Attention is spontaneous rather than voluntary. It is not persistently concentrated in a restricted channel so as to attain some ultimate end. On the contrary, it plays round objects which are directly agreeable, leaving them as soon as they cease to be attractive. External behavior shows comparatively little practical adjustment. Movement in general is quick and

vigorous. Laughter, clapping of hands, jumping up and down, singing and whistling are characteristic expressions. There is a tendency to social demonstrativeness and generosity. A man in joyful mood may go out of his way to give sixpence to a beggar, who could not have extracted a penny from him had be been sorry or angry.

Anger and joy have been called "sthenic emotions"[1] because they are accompanied by a general heightening of activity — in the case of anger, activity against opposition, in the case of joy, relatively free and unimpeded activity. Grief and fear, on the other hand, are asthenic. In them, bodily and mental action is on the whole abated or repressed. In grief there is a tendency to dwell with monotonous persistence on its own appropriate objects, loss and misfortune. Activity in other directions becomes relatively enfeebled and costs more or less effort. We speak of a person being *plunged* in grief and of attempting to *rouse* him from it. In grief there is general depression and disturbance of the vital functions, accompanied by cries, complaints, and movements which give relief by drawing off nervous energy, instead of specific motor attitudes in the way of practical adjustment to surrounding conditions. This absence of practical adjustment is connected with the nature of the object of the emotion, which is in general a loss or misfortune regarded as beyond remedy. It is spilt milk over which we cry. Fear, on the contrary, arises in a situation which demands action for averting, evading, or escaping a loss or misfortune which has not yet taken place. But, at the same time, the situation is of such a nature as to disable and disconcert either by its strangeness or by the threat of approaching evil. In extreme cases all activity is paralyzed except that of absorbed

[1] From *σθένος*, strength.

attention to the object feared. This is what is called the fascination of fear. In general, however, there is practical adjustment in the way of flight or hiding and the like, and perhaps even in the way of active opposition. But the emotion of fear in proportion to its intensity impairs the efficiency of the actions which it prompts, and so destroys "presence of mind." It is the intrepid person who is best able to face danger.

Emotion and Organic Sensation. James's Theory. — It is a well-known fact of ordinary experience that emotions, at least when they pass a certain degree of intensity, are accompanied by characteristic bodily changes, in part obvious to the external spectator, in part taking place in the internal organs. There is a play of facial gesture, varying tension and relaxation of the muscles, increase or abatement of the secretions, changes in respiration, heart-beat, and circulation of the blood. These variations in the state of the body give rise to corresponding varieties of organic sensations, which in their turn form ingredients in the emotional experience. The nervous excitement correlated with emotion plays on the organism in general as on a sounding-board, and is in its turn modified by this organic resonance.

Experimental research has traced with some fullness and exactness the nature of the changes in the internal organs connected with the special emotions, and has shown that such changes take place even when there is no manifestation of them obvious to the looker-on. Such facts as these have suggested to certain psychologists, among whom Professor James is most prominent, a theory according to which emotion simply consists in organic and kinæsthetic sensations. On this view, the nervous excitement imme-

diately connected with the receipt of good or bad news is not correlated with any emotion of joy or grief. The emotion arises by a kind of back-stroke. The primary nervous excitement must first overflow through efferent nerves, producing changes in the internal organs which in their turn give rise to organic sensations. It is the organic sensations thus produced which constitute the emotion. This is James's theory.

The theory is open to obvious objections which seem to justify a refusal to accept it in the absence of very strong and unequivocal evidence in its favor. In the first place, it seems to leave no room for a psychical change correlated with the primary nervous excitement which by its overflow gives rise to the diffused organic disturbance. The shock of bad news stops the beating of my heart. It seems inconsistent with the general principles of psychophysical parallelism to suppose that this shock is unfelt before the bodily changes occur which result from it. But if it is felt, how can it be felt otherwise than as an emotion? How can its intensity be anything but emotional intensity? Further, it is very hard to assign any characters sufficient to mark off the organic sensations which are supposed to constitute emotion from others. Hunger, thirst, headache, the diffused discomfort of a fever or a cold, are not emotions. What, then, is the distinctive peculiarity of the organic changes which produce emotional consciousness? The theory offers no adequate explanation. Even those organic sensations which admittedly enter into and color a total emotional state are apprehended merely as sense-presentation when they are separately attended to. Cold shivers and warm tinglings are recognized as cold shivers and warm tinglings, not as feeling-attitudes of the subject toward an object. It would seem that organic sensations

assume an emotional character only by being fused with an emotion which must be supposed to have a relatively independent existence. In the third place, the results of the most recent and exact experimental research seem distinctly unfavorable to the theory. The connection between the various types of emotion and distinctive bodily changes turns out to be neither so simple nor so uniform as the theory requires.

In favor of the theory an appeal is made to a sort of introspective experiment. It is alleged that if we abstract resolutely from concomitant organic changes and the connected sensations, we find that the emotion itself disappears from our view. There seems to be nothing left which we can call an emotion. This statement may, perhaps, be reasonably doubted. But even if we admit its truth, it does not prove what it is intended to prove. It may be essential to an emotion that it should find expression. It may be that we cannot suppose the expression to be absent and at the same time suppose the emotion to continue in existence. But it by no means follows that the emotion is to be simply identified with what we call its expression and the resulting organic sensation. Emphasis is also laid on our power to control emotion by suppressing its external manifestations. This is undoubtedly possible to a certain extent. But the fact can be easily accounted for without assuming the theory. We may directly suppress or "damp down" the emotional excitement by denying it its appropriate outlet. Further, the man who is attempting to refrain from the external manifestations of emotion has already some control over it. He is no longer merely its slave; his mind is already influenced by other motives which tend to check it. Finally, in the effort to modify his external behavior, his attention

and his nervous energy are diverted into new channels, and in this way the emotional excitement is abated.

We cannot then accept James's theory. And we may now add that even if we did accept it, its significance would be more physiological than psychological. It would not really mean that emotion is a kind of sensation. It would only mean that emotions are conditioned in their occurrence as sensations are conditioned, *i.e.* by excitation travelling along afferent nerves. An emotion is a feeling-attitude of the subject toward an object; a sensation is nothing of the kind. This distinction cannot be affected by any theory of the mode in which emotions are produced. From the inner point of view of the subject who experiences emotion, it remains radically different from sensory presentation, whether James's theory be true or false. But it is precisely this inner point of view which is important to the psychologist in contrast to the physiologist.

Emotions as Primary and Derivative. — When our capacity for feeling an emotion depends on our having previously felt other emotions, or at least on our having acquired the capacity of feeling them, the emotion may be called derivative. The other emotions on which it depends are relatively primary. The pity which a man feels for the grief or for the impotent anger of another may be such as he could not feel if he had not gone through analogous experiences himself. To this extent his emotion of pity is derivative. It is based on his own previous emotions of grief or impotent anger. This does not necessarily imply that the previous emotions are sympathetically reawakened in himself when he pities the person who is now feeling them. They may be so reawakened in a greater or less

degree. But such ingredients may also be absent or hardly discernible in his emotion of pity. All that is necessary is that his previous emotions of grief or impotent anger should have left behind them mental dispositions capable of modifying his emotional experience in the future and in particular rendering him susceptible of a certain kind of pity which he could not otherwise have felt.

The word "derivative," then, does not necessarily imply complexity. It does not necessarily imply that the relatively primary types of emotion enter as ingredients into the composition of the emotion which presupposes them as its conditions. For the most part the primary emotions do recur, often very faintly and obscurely, in the derivative emotion. But it would lead to needless difficulties to suppose that this is always the case.

Anger, fear, grief, joy, and surprise, in their rudimentary forms, seem to be absolutely primary. They do not presuppose other emotional experiences as their conditions or components. On the other hand, admiration, gratitude, remorse, and wounded vanity are examples of derivative emotions.

There is evidently a wide field for psychological work in tracing the genetic connection of derivative emotions with those which are relatively primary. Unfortunately, however, little of importance has been actually accomplished in this direction. The earlier psychologists mainly content themselves with attempts to define, classify, and describe various types of emotion as if they were so many specimens in a museum. This line of treatment is utterly inadequate to do justice to the *fluency* of our emotional life, to the mode in which "the internal shadings of emotional feeling merge endlessly into each other."[1] To

[1] James's "Principles of Psychology," Vol. II, p. 448.

quote Professor James, "The merely descriptive literature of the emotions is one of the most tedious parts of psychology. . . . I should as lief read verbal descriptions of the shapes of the rocks on a New Hampshire farm. They give nowhere a central point of view or a deductive or generative principle."[1] In consequence of dissatisfaction with work of this kind, more modern writers tend to deal very perfunctorily with the psychology of the emotions and substitute for this a discussion of their physiological concomitants and conditions. Better prospects, however, are opened out if we resolutely attack the problem from a genetic point of view, showing in a systematic way how derivative are based upon relatively primary phases of emotion.

Within the limits of this book we can do no more than give a specimen of the sort of work which may be done along these lines. Such a specimen is contained in the ensuing chapter on "Tender Emotions," not written by myself, but by Mr. A. F. Shand, who has devoted himself to this and allied problems.

[1] James's "Principles of Psychology," Vol. II, p. 448.

CHAPTER XVI

THE SOURCES OF TENDER EMOTION

By Alexander F. Shand

A Psychological Method for dealing with the Emotions. — While of late the chief progress in our knowledge of the emotions has been confined to their physiological effects and conditions, leading psychologists to emphasize the organic and other sensations that enter into them, it has seemed to me that there is another and supplementary method of treating them which is psychological, yet not barren of results like the definitions of individual emotions which Professor James deprecates. These, he remarks, are often based on artificial distinctions, and their accuracy is a pretence; for, excepting a few of the primary emotions, the rest have not a sufficient stability of thought and feeling to lend themselves to scientific definition. The feelings that enter into them are in a state of flux, both in respect of their strength and composition. They do not remain the same while we apply the same name to them. They elude our definitions.

Now recognizing this fact as we all do, what is the conclusion we are to draw from it? We might suppose that no scientific treatment of the emotions is possible other than the study of their sensations in relation to physiological conditions. But there is another and more hopeful alternative. Adapt yourself to this flux of emotion. Make full use of it. Do not vainly attempt to dam it up

with statical definitions. Study its cross currents and combining eddies, and ask yourself whither they are tending. For the emotions have complex tendencies. They have their own impulses, even the most quiescent. By their ends you may know them. By their ends you may trace their presence in the most unstable combinations where their feeling cannot be detected. Leave their feelings to their natural vagueness; define them by their ends. By this method alone or supplemented, we may be able to trace the intricate course of emotional development, and if our hope be not unsubstantial, enunciate genuine laws of its fusions and conflicts.

But let us not contend over the abstract statement of this method, but judge it by its results. Then apply it to the chief varieties of Tender Emotion, and if by it we are able to detect the sources of that which has seemed to psychologists both simple and primary, it will not be altogether valueless.

Tender Emotion and Sympathy. — Tender Emotion is often confused with sympathy, and love with both. And even when separately treated (as by Bain in consecutive chapters), the relation between them is far from clear. To the ordinary man love, sympathy, and tender feeling are the same, or suggest no important differences, and in Bain's account love is tender emotion. He has a chapter for the second, but none for the first. He speaks of "the warm, tender emotion, the reality of love and affection." [1] He refers to the gregarious situation as the source of "whatever is meant by love, affection, tender regard." [2] In one of the most original chapters of the "Psychologie des

[1] "The Emotions and the Will," 4th ed., Ch. VII, p. 124.
[2] *Ibid.*

Sentiments" of Professor Ribot, that on "Sympathy and Tender Emotion," we find a clear account of their difference. He distinguishes between two stages of sympathy. The first is pure or unmixed, but it is not tender, as when in cheerful society we feel cheerful, and with silent, gloomy people, depressed. The second stage of sympathy is marked by the appearance of a new element — "tender emotion (benevolence, sympathy, pity, etc.). It is no longer sympathy, pure and simple, it is a *binary* compound."[1] This is sympathy "in the restricted and popular use of the word";[2] — which, it may be remarked, is also Bain's, who defines it as "to enter into the feelings of another being, and to act out these for behoof of that other, as if they were our own"[3] — a definition which makes his separate treatment of sympathy and tender emotion perplexing, and seems to reduce us to the common opinion of their identity with one another and, the sexual passion excepted, with love. Yet Bain also cursorily noticed[4] the same distinction which is prominent in the theory of Professor Ribot, and even signalized this chief problem, How we come to attach the sympathetic emotion "to another personality" so as to work out its promptings in his behalf.[5] But he did not apparently suspect the presence of a second emotion, transforming it to tenderness, and constituting it sympathy in the popular sense of the word. On the other side, Professor Ribot has not drawn attention to those cases where pure sympathy is tender, as when the pity of a man for some one in misfortune evokes sympathetic pity from others. For where the original emotion is tender, so must be the sympathetic emotion

[1] "The Emotions and the Will," Part II, Ch. IV, i, p. 233, Eng. Trans. (Contemporary Science Series). [2] *Ibid.*
[3] *Op. cit.*, Ch. VI, p. 111. [4] *Ibid.*, p. 112. [5] *Ibid.*

which reflects it, but where it is not, pure sympathy cannot make it tender. In war we are apt to sympathize with revengeful feelings against the enemy. The fierce expression of one man that he hopes no mercy will be shown them may arouse the same revengeful spirit in another.

So much by way of introduction, and as Professor Ribot, though he has conclusively shown that pure sympathy is not essentially tender and disinterested, has not dealt with the problem on its converse side, I shall here return to it, inquiring first how far tender emotion is itself sympathetic, how it acquires its disinterested attitude, and last, what is the source of this tender emotion which Professor Ribot has pronounced to be "simple and primary,"[1] and Bain to be "one of the first, if not *the* first, of human emotions."[2]

Sympathy is not confined to any variety of feeling, and we may take the word to mean either the way in which a duplicate emotion is aroused in us, namely, by the expression of its original in the looks, words, or gestures of another person; or we may take the word to mean the bare fact of the coincidence and identical character of two or more emotions belonging to different minds; and the first, as the more complex meaning of the word, includes the second. But we employ both in ordinary use. Those who listen to a great speaker are in sympathy with him, because the expression of his emotions arouses similar emotions in them. They are in sympathy with one another, because their coincident emotions have an identical character.

Pity and the Fundamental Impulses of Sorrow. — Pity is regarded as a sympathetic emotion; but its tenderness cannot be resolved into sympathy. A man may

[1] *Op. cit.* Part II, Ch. IV, ii, p. 236. [2] *Op. cit.*, Ch. VIII, p. 124.

suffer in anger and bitterness: a woman, in her pity for him, may feel neither. What is sympathetic in her feeling? Her emotion is tender, his is hard; hers is sorrowful, his is angry. Her sympathy is confined to suffering at the sight of his suffering. Both feel painful emotions; but there is no further identity between them. Her sympathy is an inadequate measure of her pity. Her very complete pity is a very incomplete sympathy. Were her sympathy complete, it would be hard, not tender. By its departure from sympathy it becomes tender.

In all cases of pure sympathy, where the reflected emotion is not modified by new constituents, we behave as if this emotion had been excited in us in the ordinary way — as if it had been immediately aroused and not reflected. When we feel sympathetic anger we are disposed to inflict injury or pain, just as if the quarrel were on our own account. When our pity is caught from our more pitiful neighbor, we are disposed to relieve suffering, as if the sight of it had directly moved us. And as when we rejoice in anything we tend to maintain ourselves in presence of it, so when we are infected with a sympathetic joy through the good spirits of our companion, we remain in his society, or leave it with reluctance. And as when anything displeases us, we are disposed to avoid it, so when we are depressed by a melancholy man, we are disposed to avoid him. But when we pity him, we act quite differently. Instead of avoiding, we remain with him; instead of neglecting him, we wish to be of service. The sympathetic gloom that we feel reflected from him is not tender: our pity, which is not sympathetic — which is not a reflection of his feelings — is. Does this new and tender emotion account for so great a change in our feeling and attitude? Does it not only

overcome the preceding impulses of avoidance and neglect, but substitute new and opposite impulses of attraction and service? Yes, it appears to do so, and to be, in the words of Bain, an exception to the "regular outgoings of the will in favor of our pleasures!" But he offers no other explanation of so startling a fact, except to refer to the gregarious situation and the analogy of the fixed idea. And he is not quite satisfied with the explanation, and accepts it provisionally, in place of a better. At least, it is not because our feeling is sympathetic that it manifests this tender feeling and exceptional conduct, but because it is pity. What then is Pity? Can we analyze it? Can we at least class it and so determine whether its impulse is as exceptional as it seems? Yes, we can at least class it, and its impulse is not as exceptional as it seems. Pity is a kind of sorrow, gentle, not violent. Thence it derives its impulse. For all sorrow that has risen above the blind stage and found an object tends to maintain the presence of its object, and in absence to think of it. And in absence, moreover, it tends to pursue this object in order to be again united to it. Because sorrow, though a painful emotion, clings to instead of forsaking its object. Hamlet throws himself into the grave of Ophelia, not to be separated from her. And even when we grieve, not for persons, but for the loss of wealth, position, or power, we persistently think of the object, and maintain it in thought instead of excluding it. Nor when we do exclude it, is the motive of exclusion ever the genuine impulse of sorrow, but due to our reflection and self-control. And this difference we can easily discriminate. Of what use, we say, is vain sorrow? The impulse of pity is the same; and if pity is exceptional, then so is all sorrow. But the theory which is accepted, as a matter of

course, that all painful feelings have an impulse to avoid their objects, is too wide. It may hold of all painful sensations, but it does not hold of all painful emotions. Sorrow and anger contradict it. And sorrow, as a primary emotion, has its own complex striving. It is not the same as that of other painful emotions. Anger strives to injure or pain its object; Fear to hide or flee from it; Disgust to avoid or reject it; but Sorrow just to cling to it.

Sorrow has a second characteristic impulse, which may be repressed, but is never extinguished. Where its object is injured or defective, it strives to restore or improve it. And this impulse goes out not only to persons, but things — to broken glass, to holes and rents and stains, to everything we value, and whose defacement we regret.

Yet see how this impulse of sorrow is sometimes repressed. For Despondency is a quiet sorrow, not given to tears and sobs; and as it loses sight of the possibilities of improving its object, — this piece of work that I would make excellent, this fortune that I would make great, this position that I would make secure, — so is this impulse of improvement weakened. But still in thought it clings to its object, and in solitude broods over its ill-success. Melancholy is like it, but prone to be more persistent. It has a pleasant element, some say, because it evokes the pleasant scenes of the past. But it discerns no possibility of bettering its object, of restoring life to that happy state which was once anticipated, or once enjoyed. Hence the repression of its impulse; yet still, and throughout all, it clings in thought to its object, and often in imagination reveals the impulse which is denied an outlet in the world of reality. It reconstitutes life from cherished illusions, and "molds it nearer to the heart's desire."

And the last of this group of emotions of a pervading common feeling and common impulse is Despair. And despair is a desperate sorrow. Again and again has its restorative impulse been repressed. There is no outlet left and its inward battling is vain. Hence its extreme anguish. Yet were the dead to discover the faintest signs of life, how would sorrow cease to be despair, and manifest its restoring impulse.

It is because pity is a kind of sorrow, not because it is sympathy, that it clings to instead of abandoning its object. It is because pity is a kind of sorrow, not because it is sympathy, that it prompts us to relieve suffering and restore the injured. It is because pity is that kind of sorrow felt not for self, but for others, not because it is sympathy, that it is essentially disinterested. Sympathy cannot interpret the peculiarities of any emotions nor of their characteristic conduct. It is a mere echo, reflection, or copy. Pity is ordinarily complicated with some degree of sympathy, and like any other emotion, like anger, fear, or disgust, may be sympathetically aroused; but it is essentially independent, and there are cases of pity into which sympathy can hardly enter. We pity the dead whose emotions we have no cognizance of. Poor corpse, we say, because its life is extinguished. But should we pity the dead less, if we knew they were incapable of delight or suffering? There would be in their vanished existence nothing with which to sympathize, but how much to pity.

Nor can the good man sympathize with the vices and debauchery of the wicked man. They excite his abhorrence. But he may easily pity him. He pities him because he has lost sight of his higher nature and true happiness. He regards his state as most miserable, and

tries to convince the wicked man of a misery which the latter does not feel. His pity is tender, but it is not sympathy. That which arouses it is the ruin of the man's character. This excites his disinterested sorrow.

Reproach. — Reproach is often a tender emotion. It is a mingled sorrow and indignation. We reproach those whom we love for unkindness, cruelty, or injustice; but we do not easily sympathize with the feelings which have prompted their conduct, not though the depth of love and tenderness restrain anger. "Beautiful regards were turned on me — the face of her I loved; the wife and mother, pitifully fixing tender reproaches, insupportable!" For there is an accusation in reproach, though one that does not invoke punishment, but repentance. And here also the universal impulse of sorrow for the restoration of its object is disclosed. As it is disclosed in our common pity in the impulse to relieve suffering, so it is disclosed in reproach in the silent call to repentance.

The character of Reproach becomes clearer when we contrast it with Denunciation. There, too, is an accusation. But it is willingly adopted, not grievously torn from its subject. Denunciation has no tender feelings, because it is grounded in anger, not in sorrow. Reproach is grounded in sorrow; and anger, so far as it enters in, is restrained. It is not permitted to invoke vengeance. The impulse of sorrow is in the ascendant, which strives not for the injury, but the restoration of its object.

Gratitude. — Gratitude is a tender joy, as Pity a tender sorrow. But all joy is not tender. That referred "to services to be received" is without it, and so is the child's joy in a new gift when it includes no inward feeling of

thanks to the giver. For the joy at first centres in the gift or service, but in the grateful heart acquires a new reference to its benefactor, and now transformed to tenderness, centres in him. But what changes the reference; what transforms it; what new emotion is evoked?

Joy is a diffusive emotion. It transcends its proper object. When good fortune favors us, we rejoice more than we should otherwise do in the presence of friends and acquaintances. The very earth is pleasant to us, and familiar things illuminated. Among surrounding objects, no one so much impresses us and engages our attention as that which is the cause of our good fortune. If it has come to us through the instrumentality of another, though without intention on his part, he is included in our joy, and we desire him to share our profit, — how much more when it is due to his good will. Thus the diffusiveness of joy, and its natural passage from effect to cause, explains how we come to rejoice in the presence of our benefactor. And we do not merely rejoice in his presence, but in his state of mind toward us. For that is the veritable cause. To his kindness we owe our advantage. To that our joy mounting from effect to cause refers itself.

But what changes the feeling as thought passes from benefit to benefactor? Why is the joy of the ungrateful heart without tenderness, and the grateful suffused with it? Gratitude has its tears; has it also a sorrow hidden in its joy? It seems that when we rejoice in the thought of another's kindness, we at the same time are sorry for the pains it has occasioned him, and the loss of time and money. Is this explanation fanciful? At least it interprets some cases. The parable of the widow's mite touches us because she gave all that she had. We compassionate

her poverty; but the rich man's ostentatious gift which leaves him still rich, and costs him no painful effort, for him we feel no compassion and no gratitude. In proportion as we realize that the service rendered us has cost our benefactor much in trouble, time, or money, we are both sorry for the cost to him, and our gratitude is increased; but in proportion as we realize that it has cost him little, sorrow on his account is diminished as well as gratitude. Thus the rich often complain of the ingratitude of the world. The sight of their ease and luxury blinds it to their secret troubles. Their gifts seem to involve no sacrifices, and their great feasts and houses full of guests provoke no gratitude from those that enjoy them.

Thus the idea of "cost" plays an important part in arousing the emotion of gratitude, and this we might infer from the conventional language which politeness requires us to adopt when even the smallest service is rendered to us. We protest that we are sorry for the trouble we have occasioned, and render our thanks.

But there is one thing that arouses gratitude when the cost of the service is inappreciable. There are little gifts and services which cost nothing, yet for which we are grateful because they seem to express love. We are grateful for love. A service that is unwillingly rendered or is meant to humiliate us, or is accompanied by a patronizing air, for that we feel no gratitude. When we see the evidence of kind feeling, our heart at once responds. A small service with love moves us more than a great one without it. But if the cost is little, where is the occasion of sorrow, how comes it that we feel gratitude? Is it not obvious that where love is, there is this disposition to make sacrifices? Our thought is not confined to the present, but feels vaguely future possibilities. And if with our joy

in a gift we are apt to feel some sorrow for its actual cost to the giver, shall we not in the gift of love be apt to feel more in the thought of the indefinite cost to which it exposes itself? And this too explains how any description from real life or literature of noble character at once arouses in us a tender admiration. For such a one is ready to give what he can ill afford to lose, and in his exertions for others to forget his own interests; and the sorrow that we feel, making tender our admiration, is enhanced when we reflect on the common destiny of such characters, how ungratefully they are used and neglected.

But there is evidence to show that where we cannot detect the actual feeling of sorrow, its characteristic impulse is present. The operative ideas of cost and sacrifice may not reinstate the emotion, but they reëxcite its disposition and transform joy to tenderness.[1] For as there is no emotion of gratitude without these ideas or their equivalents, so there is no gratitude without the impulse to recompense its benefactor — to restore to him what he has lost. This is the same universal impulse of sorrow for the restoration of its object, changed, but still substantially the same by the ideas of cost and recompense.

And what part does sympathy play in gratitude? As sympathy is a mere echo and can originate neither the feeling nor impulse of pity, so it cannot interpret gratitude. And as sympathy is in most cases mixed with pity, and prepares the way for it by making known to us the feelings of another, so is it mixed with gratitude. But there is a difference between them. The feelings of the sufferer are not often tender. We pity him for failures, disappointments, and misfortunes that often leave him embittered and sullen, but not often engrossed in self-pity nor, except in his

[1] I here apply D. Stout's theory of disposition.

grief for those dear to him, feeling a tender emotion that he can impart to us through sympathy. But it is different in gratitude. Both he who does and he who receives a kindness are apt to feel a tender emotion, rendering possible an exchange of it. And this exchange of feeling through sympathy plays here an important part, both intensifying gratitude in the one and benevolence in the other. But unless there were on one side or on the other some original spring of tender emotion, there would be none for sympathy to reflect.

Benevolence. — As there is in Gratitude a double source of its tender emotion, which is both original and sympathetic, so is it often in Benevolence. The kindly man sometimes feels pity for the suffering he is about to relieve, sometimes in imagination reflects the grateful thanks of the recipient. But at other times, as in doing small services, he can hardly feel the one, and may not anticipate the other. Still in his own sentiment is a perennial source of tender feeling. There are those who miss it in their good deeds because they are done from a cold sense of duty, not from love, and without imagination of the happiness and gratitude they may provoke. But benevolence, like all love, though it may feel no immediate pity, where the situation does not evoke it, has a horizon wider than its present action; and just as one who recognizes love behind its least services feels vaguely the sacrifices which it is disposed to make, so he who does the smallest service from love feels vaguely the greater needs to which he would willingly respond. And as on the one side gratitude is aroused with the sorrow at these possible sacrifices, so on the other, tender emotion with the sorrow at these possible misfortunes.

The hypothesis advanced in the preceding pages interprets not only the varieties of painful feeling that are tender, but also the corresponding varieties of pleasurable feeling to which it seems at first sight ill-adapted. To some actual or potential admixture of sorrow is due the tenderness of gratitude and benevolence, as well as of pity and reproach. But it is still more significant to watch the working under new conditions and in new emotional states of the universal impulse of sorrow to restore the loss or injury of its object. To that is due the impulse of Pity to relieve suffering, the invocation to repentance of Reproach and the desire of Gratitude to recompense its benefactor.

Aspiration, Trust, Resignation, Reverence, Repentance. — We can easily detect, through their feeling or impulse, the action of sorrow in the remaining tender emotions. The upward gaze of Aspiration is dimmed with the sorrows of sin and failure. The disposition to sorrow of clinging Trust is stirred by the sense of weakness. Reserve and secrecy, the supports of our proud independence, are surrendered. To some extent we are in the power of another, and feel dimly the evils he could inflict on us. But the sorrow at weakness is absorbed in the joy of trust; and the joy of our security grows tender. And so, while there is one kind of Resignation which is the calm attitude of courage facing the inevitable, trust enters into the weaker and affords it a tender consolation.

In Trust and Resignation tender feeling is not universally present, but Reverence and Repentance cannot be without it. In the second, sorrow is prominent; in the first, disguised or potential as in gratitude. We can distinguish two constituent emotions in reverence, fear and admiration, evoked by the greatness and mystery of its object. We

feel their opposite impulses; for while admiration draws us into the presence of the object and holds us there, fear would keep us at a distance. And fear still restrains us from all familiarity. But what distinguishes reverence from awe, which is also evoked by the greatness and mystery of its object? In awe there is both admiration and fear, and the same opposition of impulses. The precipice and the ocean arouse awe. We are drawn to and yet away from them. But the complex emotion changes to simple fear when we are too close to their manifest dangers. Yet awe is different from reverence. It is not a tender emotion. For not greatness and mystery alone evoke reverence, but only in union with goodness. And goodness is apt to inspire pity when we think of the common fate that attends it. It seems a distinct diminution to the power of the object, exposing it to attacks which it otherwise would know well how to guard against. The love of others makes it lay aside its power to subdue and despise them, and betrays it into their unscrupulous hands. Hence reverence, recognizing the goodness and love in this great and mysterious character, tends to feel some tinge of sorrow in contemplating it, and is impelled to a great devotion, because its humble efforts are needed. And here the impulse of sorrow to restore its object imaginatively precedes misfortunes and forestalls them. This is the original source of the tender feeling of reverence, but other emotions are blended in it which increase its tenderness. Its sympathy is tender, because the feelings of its great object are tender to us, and its disposition to benefit us inspires a responsive gratitude.

Thus to the ineradicable impulse of sorrow to restore the presence or well-being of its object is due the devotion of reverence, the resolution of repentance to amend its life, and

the yearning of aspiration after a perfect state. In trust and resignation, the impulse is counteracted, as it is in despondency and melancholy, by the hopelessness of the situation. In the one you have irrevocably disclosed your secrets and hidden weakness, and can never regain the strength which comes of secrecy; in the other, you cannot remedy your weakness. You have to face the inevitable, and be resigned to it, if possible, with trust, but still resigned to it.

Love. — According to the common opinion, love is a tender emotion. Thus Bain in his comprehensive work has no chapter on love, but what he has to say about it is placed in his chapter on "Tender Emotion."[1] But no emotion can sum up love, nor can it be contained in any single pulse of consciousness. Love is always an emotional system.[2] Nor does tenderness always belong to this system. It is absent from the love of power. The exalted love of knowledge, apart from admixture of other sentiments, has no place for it. The sensualist's love is antagonistic to it. But it appears so frequently in our affections as almost to epitomize them. Not only are the joys of human love tender, but its sorrows of bereavement after the first bitterness has passed. Tenderness mixes with its hopes, anxieties, and fears, with its retrospective as well as prospective emotions. And if there are some bitter sorrows that refuse to be softened, while anger makes them hard, yet tender emotion almost sums up the character of this love, and is our nearest approach to it in any single state of consciousness.

But why is love so frequently affected with tenderness? —

[1] "The Emotions and the Will," Ch. VII.

[2] I assume this in the text; for the evidence of the theory see "Character and the Emotions," *Mind*, N.S., Vol. V, pp. 217–219; also G. F. Stout's "Manual of Psychology," Bk. IV, Ch. IX, § 5.

for it appears where we should least expect it. Can sympathy account for its presence and disinterestedness? The mother sympathizes with the joys of her child, yet often at their manifestation feels a tender yearning. His boyish enthusiasm in his battles with tin soldiers arouses a sympathetic joy in her, but cannot explain its tenderness. Little does the boy feel this tenderness of the mother; little does she understand the meaning of it. For nothing stands out in her mind to account for a feeling of sorrow. It is not a moment of parting foreshadowing the pains of absence. Before her simply is the spectacle of childish joy; and yet her sympathy is so unlike it as to feel tender. It is because love enfolds its object as a whole, and is not like emotion confined to some phase of it. With this extended prospect, and steeped in its reflections, some ill-defined sadness must often mingle with its present joy. The aura of the sentiment encloses its present emotion; and in the aura of love is tenderness and sorrow.

Tenderness as a Complex and Derived Emotion. — Tender emotion is the name of a class of many varieties. It is not like fear or anger. We think of them as individual emotions, and though they represent classes, the differences of their members are comparatively unimportant. But the varieties of tender emotion present a marked individuality of their own, such as pity, gratitude, reproach, reverence, trust, repentance. Thus we cannot think of it as an individual, but as the common character of a class. And if it is, as it is supposed to be, simple and primary, as well as one of the first of our emotions in the order of time, it is not as any one of its varieties which are all complex, but as some constituent emotion which enters into all of them.

Of all the tender emotions, pity appears the simplest. Gratitude, reverence, aspiration, reproach, repentance, pathos, are emotions blended of two or more varieties. Yet is pity all sorrow, and is sorrow alone the source of its tenderness? Is all sorrow tender? Is the infant's "muling and puking in its mother's arms"? Is the boy's at the loss of a pocket-knife, or ours at the breaking of a costly vase? Is there tenderness in the bitter regret we feel at the loss of wealth, position, or power? There are hard as well as tender sorrows.

It has often been remarked that there is sweetness in pity; but no wholly painful emotion can account for it. If we try to imagine a pity that is all painful sorrow, it will be neither sweet nor tender. Such is often that which we feel at the irreparable misfortunes of others. We shrink from offering them the traditional consolations which sound so hollow. We feel that we can do nothing. "How horrible," we say. If we could show love in little acts that would not seem an intrusion, sorrow would be sweetened. For the tenderness of pity seems to come from the ideas and impulses that go out to relieve suffering. But if they are repulsed, if there is no use for them, now or in the future, and time must be left to effect everything, the tenderness of pity is resolved into one of its elements. We feel a degree of that horrible sorrow which the sufferer feels. But pity is often sweet and pleasant. The sentimentalist dallies with it. There is for him a "luxury" in its sorrow.

This pleasurable element in pity we can sometimes recognize as joy — joy in the thought of the good deeds that tend to reverse misfortunes, — and we are led to suspect that some subtle interaction of joy and sorrow may be the source of all tenderness. One may predominate, and

the other may be present in a degree too small to appreciate, or while its disposition is reëxcited and acts upon the predominant emotion, its feeling may not be reinstated in consciousness,[1] yet this may be sufficient to transform the result, for where we cannot detect the feeling, we can discriminate its impulse. Thus we have followed this method in treating of gratitude, where the feeling of sorrow may be inappreciable or absent, where joy stifles it, yet transformed to tenderness submits to its enduring effect. For all joy is not tender any more than all sorrow, as the joy of power over others, of revenge and malice. Nor will it be made tender by the action of any painful ingredient, but only of sorrow. In the proud, humiliation mingles with the joy of a gift; in others, fear, as in the maiden, at the sacrifices that might be required of her. The result of these fusions bears no resemblance to tender feeling. Both are ungrateful. But, in gratitude, its essential impulse to recompense its benefactor is evidence that it is derived from neither anger, nor pride, nor fear, which have no such impulse, but only from sorrow. Nor could we any more derive this impulse from joy alone. Joy, like sorrow, tends to maintain the presence or thought of its object. But joy tends to maintain this object as it is, not to improve it. For where there is nothing present to arouse grief, there is no impulse to restore or improve. Therefore we can only derive this distinctive impulse of gratitude from the hidden influence of sorrow.

Yet the joy in gratitude is essential to its tender feeling. We all know how we try to be grateful when we are given something that displeases us, or is quite useless. We think that it was kindly meant; we may recognize that we ought to make a suitable return; but we do not often experience

[1] Mr. Stout's theory of dispositions covers this case; see *ante*.

tender feeling. And in those cases where we do, we can still detect the presence of joy, without which there is no emotion of gratitude. For a noble nature overlooks the want of imagination in the gift, and rejoices when it is a symbol of the gift of love. Thus in both pity and gratitude, while the disinterested impulse comes from sorrow, both joy and sorrow must interact to produce the tender feeling.

If we consider the remaining tender emotions, we shall find always in them some blending or interaction of joy and sorrow. Thus in reverence there is the joy of admiration, as well as its hidden sadness. In aspiration there is joy in the ideal and sorrow in the actual. In trust, the joy of protection and the sorrow at weakness. In repentance, joy in a new life unfolding and sorrow in the old life not yet dead. But in tender reproach we might suppose there were only sorrow. What source of joy can there be in contemplating the wrong, the cruelty, the ingratitude, or the forgetfulness that arouses it? But reproach is one of those emotions that are only developed in sentiments.[1] Tender reproach is addressed to one whom we love. And whenever we love, there is an undercurrent of joy, the working of a hidden disposition growing out of many memories, which, even when the experience of its object is overwhelmingly painful, is secretly flowing into it from the past. For he whom we love must have been a source of joy to us. He can never look like one to whom we are indifferent. There is a contrast present to the mind, and often vividly present, of what he was and is, and present sorrow and indignation interact with the disposition of former joy. Thus joy, sorrow, and anger are all active; but while anger makes sorrow hard, joy blending with it

[1] See "Character and the Emotions," *Mind*, N.S., Vol. V, pp. 219–221.

makes it tender. These are the opposing influences present; and hence it often happens that reproach is not a tender emotion, the influence of anger counteracts the dispositions of joy and love.

In most tender emotions joy or sorrow predominates, while the complementary feeling is sometimes inappreciable. Thus we can trace the marked contrast between gratitude and pity to this, that in the one joy predominates, in the other, sorrow. For perception commonly arouses a stronger emotion than ideas. But in Pathos the two emotions are more evenly balanced, and we can see more clearly how their tender feeling is aroused. The æsthetic feeling for beauty is a species of joy which, mingling with sorrow, produces pathos. Thus, "our sweetest songs are those that tell of saddest thought." But if we have no sense of their beauty, they are apt to become depressing. A tragedy of Shakespeare contrasts with the domestic tragedy of Ibsen because the beauty and grandeur of the one, the great personages that take part in it, the splendor of their surroundings, all tend to maintain joy and admiration and blend with our sorrow at their fate, while in the other the absence of beauty and the vulgar incidents afford no relief from sorrow. Eliminate the beauty and the joys of life and you have left a heavy depression without tenderness. But whenever we take a comprehensive view of life, joy and sorrow tend to be revived together, even if sorrow predominates. We feel "the still, sad music of humanity." Even the common earth and sky recall both emotions, and the poet "looking over the happy autumn fields" feels the mystery of his own tears. And thus human love, because it takes this comprehensive view of its object, is so often tender. Commonplace as are the words by which it expresses itself as "dear" and "dearest," there are

situations in which they are so charged with meaning that they seem to concentrate love in a moment. At meeting and parting what a tenderness is in them. For the joy of meeting has come to mix with the sorrows of absence, and the sorrow at parting is dissolving the last joy of being together. And so, whenever we use these words for the concentrated expression of love, they necessarily express tender emotion. How tender is the language of Shakespeare's patriotism, "This land of such dear souls, this dear, dear land." And when Shakespeare says, "Grief joys, joy grieves, on slender accident," he is but expressing the common transition into one another of these opposite emotions, yet not so opposite as people think. For both share in a common striving, both tend to maintain their objects in perception or thought. Both, though opposed in feeling, harmoniously unite. How much less stable is the union of joy and fear. There is something restless in this combination. We are drawn to and away from the object of reverence. The fear in awe must be subdued or it destroys the emotion; on the verge of the precipice the sublime may dissolve in terror.

Thus as we consider the evidence as a whole, it is against our concluding that Tender Emotion is simple and primary. Two emotions, at least, have preceded it. It is derived from them and their dispositions; it is not primary. There are many varieties of joy and sorrow, and not all of them in their fusion may produce this emotion. But however this may be, like all products of mental development, like the production of the special sensations from a common sensibility, and of the fundamental types of thought from an undifferentiated awareness, and the types of will from a blind conation, tender emotion cannot be resolved into the components we can still trace in it. The result is not

an arithmetical sum of its constituents. In the process of their interaction its distinctive quality is evolved. And so we have a class that we name Tender Emotion, the members of which, through all their marked distinctions, have this pervading common character.

CHAPTER XVII

THE SENTIMENTS

Differentiation of Interest. — With the development of cognitive consciousness we become more and more fully and distinctly aware of what we want and of how to obtain it. The objects of conation become more complex and differentiated. This means that conation itself becomes more complex and differentiated. Interest progressively defines itself in cognition, and in defining itself transforms itself. In the process of satisfying one interest new results are experienced which give rise to new interests. A child delights in letting things fall on the ground. He does this with an elastic ball and the ball bounces. The bounce itself is impressive and pleasing. Hence in the future, the general interest in letting things fall becomes in the case of the ball a specific interest in making it bounce. Similarly, a person may read a book in the first instance merely for the purpose of passing an examination. But as he reads he may become directly interested in the subject-matter. This development of interest goes on more or less throughout life.

The Genesis of Sentiments. — There is yet another and an immensely important mode in which previous interest generates new ones. An object which has been connected with agreeable or disagreeable activities, which has given rise to manifold emotions, which has been the source of

various satisfactions or dissatisfactions, becomes valued or the opposite in and for itself. It becomes liked or disliked, loved or hated, for its own sake. The child's interest in his mother is at first directly connected with her action in satisfying his needs and desires, in playing with him, and generally in coöperating in the development of his own psychical life. But in time he begins to love his mother. He concerns himself with what she does and what happens to her, apart from any reference to other preformed interests of his own which she may help or hinder. The thought of her being grieved directly grieves him. The thought of her being pleased directly pleases him. The belief or even the imagination of her being ill-treated makes him angry. Her mere absence makes him cry, and her return makes him rejoice. He could not be compensated for her loss by the substitution of some one else like her. In an analogous way he may come to attach value to inanimate objects, and especially to his toys. He may form a sort of affection for a tin soldier or stuffed rabbit. He may, for instance, take it to bed with him, and not be content unless he knows that it is under his pillow. When the toy is broken, it may not be by any means a sufficient consolation to give him another like it or superior to it. Doubtless young children tend to represent their playthings as having a psychical life somewhat analogous to their own, so that the object of their affection is not for them purely impersonal. But it is quite possible to attach a sentimental value to an inanimate object without personifying it, except perhaps in an exceedingly dim way. We may form an affection for an old and well-tried pipe, or for a well-worn volume which we have used for years. The finest meerschaum or the most beautifully bound copy of the same book will not do as a substitute.

The child's love for his mother or his toy exemplifies what for want of a better name we may call a sentiment.[1] This word is very loosely used in ordinary language, and psychologists in general have failed to give it a meaning much more precise. There can therefore be no harm in applying it as we propose. There is a link of connection between this application and the common use of the terms "sentimental" and "sentimentality." A person is said to set a sentimental value on a thing when he values it out of proportion to any special advantages which are derivable from it. It is sentimental to prefer an old and tattered copy of a book to a new one better printed and better bound. Ruskin's objection to railways is said to be sentimental, because it does not seem to be founded on any actual harm which they do, and overlooks the great advantages connected with them. It is sentimental in Lydia Languish to prefer an elopement to an ordinary marriage. Now it is very far from true that all sentiments in our sense of the term are sentimental, but they all involve the valuing of an object for its own sake and not merely for advantages derivable from it. The popular usage has fastened especially on the particular cases in which the valued object appears not to be really valuable.

Sentiments are Dispositions, not Actual Feelings. — A sentiment, as we have defined it, cannot be actually felt at any one moment, as emotions can be felt. Its relation to emotions, conations, pleasures, and pain, as actually felt, is twofold. On the one hand it develops out of them. It is through the varied forms of agreeable interest felt by me from time to time when I have social intercourse with

[1] Proposed first by Mr. Shand. "Character and the Emotions," *Mind*, N.S., Vol. V.

a man that I begin to entertain a sentiment of friendship toward him. On the other hand, sentiments, when they have once come into being, are themselves independent sources of manifold feeling-attitudes and conations, varying with varying circumstances. They are complex mental dispositions, and may, as divers occasions arise, give birth to the whole gamut of the emotions. "In the love of an object," says Mr. Shand, "there is pleasure in presence and desire in absence, hope or despondency in anticipation, fear in the expectation of its loss, injury, or destruction, surprise or astonishment in its unexpected changes, anger when the course of our interest is opposed or frustrated, elation when we triumph over obstacles, satisfaction or disappointment in attaining our desire, regret in the loss, injury, or destruction of the object, joy in its restoration or improvement, and admiration for its superior quality or excellence. And this series of emotions occurs now in one order, now in another, . . . when the appropriate conditions are present." [1]

With inversion of conditions these same emotions "repeat themselves . . . in the life history of every sentiment which we name dislike or hatred. There is pain instead of pleasure in the presence of the object, desire to be rid of it, to escape from its presence, except we can injure or lower its quality, . . . anger or fear when it is thrust upon us and persists, . . . regret or grief, not in its loss or injury, but in its presence and prosperous state." [2]

Development of Sentiments in Complexity and Abstractness. — Sentiments may be conveniently though very roughly classified as concrete or abstract. The concrete have as their objects, individuals, or groups of individuals

[1] Shand, "Character and the Emotions," *Mind*, N.S., Vol. V. [2] *Ibid.*

united in some kind of whole. The child's love for his mother is concrete in this sense. Abstract sentiments, on the other hand, have for their objects some general feature of concrete experience. Love of power, of fame, of justice, of truth, come under this head.

The first concrete sentiments are directed toward individuals. The child begins by loving single persons, *e.g.* his nurse or mother. But as his experience widens and becomes more highly organized, a sentiment arises which has for its object the family as a social group, including all that is intimately associated with family life. This may be called the home sentiment. When it is strongly developed it lasts long after the home has been broken up. At school a special school sentiment is generated which may persist throughout life. A man of sixty or seventy may feel his heart warm at the sight of an old schoolfellow whom he cares little for, or even dislikes as an individual. At a later date, patriotism emerges; and this may be more or less comprehensive. It may be what is called local patriotism, confined to the town or village or county in which a man is born or in which he lives. It may be love of his country in the narrower sense, *e.g.* of Scotland in distinction from England or Ireland, or it may be some kind of imperial sentiment.

Self-love which, when it passes certain bounds, is called selfishness, must be classed as a concrete sentiment having an individual for its object. It is connected with the conception of self as having private interests which may conflict with the private interests of others. So far as man's interest in doing a service to the public would be equally gratified by seeing some other person perform it instead of himself, self-love is not involved. So far as his satisfaction depends on the service being done by himself

and not by another, it depends on self-love. In general, self-love has, with certain modifications, all the characters of other forms of love. To love a person is to find satisfaction in his presence and dissatisfaction in his absence. Now a man is always locally present to himself, and therefore this local presence can afford him no special gratification. But the pleasure which we take in the presence of a friend is mainly a pleasure in social communion with him and in vividly realizing all that his existence means for us. To this there is a counterpart in the case of self-love. Self-love is gratified by opportunities for attending to one's self so as vividly to realize one's own importance. It is gratified by talking about one's self or hearing one's self talked about, by finding others look to us for assistance and advice, and so forth. The pleasure some people take in seeing their own name in print or appending their name to a document is a typical instance of this gratification of self-love. On the other hand self-love is disagreeably thwarted when the tendency to attend to ourselves and realize our own importance is in any way repressed, *e.g.* when we want to talk of ourselves, and cannot get people to listen. In other respects the analogy between self-love and the love of another is very close. We feel fear in the expectation of loss or injury to the self, anger when the gratification of self-interest is opposed, elation when we triumph over obstacles in obtaining our own private advantage, regret when we suffer injury or loss, admiration for our own superior quality or excellence.

Pride, vanity, love of power and distinction, and love of fame are one-sided developments of self-love, and as being one-sided ought rather to be classed among the abstract than the concrete sentiments. Each has for object a certain general aspect of the life of the self. In pride what

is especially valued is the superiority, or at least the equality of the self in relation to others. The emotions of wounded pride are especially excited by being obliged to feel and recognize dependence on others, by being compelled to ask their advice, to follow their lead, or to borrow money from them. On the other hand, the emotions of gratified pride are especially excited when we have occasion to realize vividly our own self-sufficiency or the dependence of others on us. The distinctive mark of the proud man is that he takes pleasure in the independence or the superiority which he supposes himself already to possess. His complacency is disturbed only when anything occurs to disturb his preconceived high opinion of himself and of his position and belongings. In this respect pride differs from the general love of power or distinction. The ambitious man may restlessly seek for power and distinction, and may stoop to flatter others and place himself under unrepaid obligations to them in order to gain his ends. But the merely proud man finds such behavior repugnant to him.

He is stably content with his actual position and condition, and feels no promptings to enter into competition with others for distinction and power which he does not already possess. Vanity is distinguished from pride, inasmuch as what it values is not merely superiorities or excellences of the self, but the express and emphatic recognition of these superiorities or excellences on the part of others. It thus involves a dependence on others which is repugnant to pure pride. The vain man boasts and brags; he finds it necessary to make others admire and applaud him in order that he may enjoy what he supposes to be his own excellent qualities, achievements, or possessions. But the proud man, as such, does not boast. What he values is

his own real excellence, and not the show of it. "When vanity is excited we always regard ourselves indirectly and from the outside, as we should appear to a spectator. Hence the looking-glass is the emblem and symbol of vanity."[1]

Among abstract sentiments not connected with self-love we may refer the hatred of injustice or oppression, devotion to the cause of science, or art, or religion, the love of economy, or order, or cleanliness, detestation of humbug, or of affectation, or of servility. Carlyle's hero-worship was in a large measure a valuing of the abstract attribute of strength or efficiency for its own sake; on the other hand, weakness and inefficiency as such excited his contempt and disgust. To hate injustice is not merely to resent wrongs done to ourselves or our friends; it is to resent wrongs wherever they may occur, even when they are done to our enemies, or to persons in whom we have otherwise no special interest. In one who feels this or analogous sentiments deeply and keenly, there is a tendency to personify the abstract quality. Consider, for example, the way in which Shelley and Byron wrote about Freedom, or Wordsworth about Duty. The lover of economy is shocked by seeing or hearing of wastefulness wherever it may be found, and even by the mere thought of it. The worshipper of riches feels a sentimental pleasure and admiration at the mere sight of a millionnaire, or of accumulated treasure.

[1] Shand, "Character and the Emotions," p. 221.

CHAPTER XVIII

VOLUNTARY DECISION

Development of Will. — The term "Will" is sometimes used, in a very wide sense, for conation realizing itself. Sometimes it is used in a very restricted sense for voluntary decision, resolution, or choice. Such decision, resolution, or choice involves the presence of at least two conative tendencies, and a preference on the part of the self of one to the others. The resulting action is determined by this preference, and not merely by any one of the alternative tendencies between which a decision is made. It is only in reference to such intervention of the self in deciding between alternative lines of conduct, that we can speak of the freedom of will. Voluntary decision is a relatively late product of mental development. On the purely perceptual level, action follows the immediate impulse arising out of the circumstances of the moment. It is prompted and guided by the perceived situation without any train of ideas representing the end pursued and the means of its attainment. At this stage there can be no voluntary decision, because there is no presiding self to make it. The self of perceptual consciousness is merely the self of the moment, just as its world is just the actual situation present for the time being to the senses. There may be hesitation between conflicting impulses, as when a dog is recalled from chasing a rabbit by his master's whistle. But the result is deter-

mined by a direct trial of strength between the competing tendencies, not by a voluntary decision preferring the one to the other.

As the life of ideas develops desire takes the place of merely perceptual impulse. Conation, instead of issuing directly in bodily action or failing altogether to find an outlet, dwells on the idea of its end and the ideally represented means of its attainment. Further, the object may be itself more or less a result of free ideal construction. We can not only "desire to live again through experiences of which there is nothing actually present to remind us";[1] we can also desire what we have not previously experienced at all. With the progress of conceptual analysis and synthesis these ends become more complex, more remote from the present situation, and more generalized. Thus ends come to be pursued which demand the labor of a lifetime; others again require the combined effort of many individuals, each making a relatively small contribution to the common cause. Often the desired object is one which cannot be fully realized within the lifetime of the agent.

Another aspect of this process is the organization of conative tendencies in a more or less unified system. Each separate end is pursued, not only for its own sake, but also as a step toward or away from other ends. It is regarded a part of a general plan of life. We eat not only because we have an appetite for food, but also because we cannot do other things, or live at all, without eating. A student reads a text-book not only because he is interested in the subject-matter, but because he desires to pass an examination; he desires to pass the examination not only because he wishes for evidence that he really knows something about the subject, but also because he desires a diploma;

[1] Ward, article on psychology in the *Encyc. Brit.*, p. 74.

this again is wanted as a step to entering on a profession; the profession again is valued partly as a means of playing a respectable part in the general order of society, partly as a means of making money which shall enable him to marry. In this system some ends are relatively more comprehensive and ultimate; others more special and immediate. To take one's place in the social order by becoming a doctor or lawyer is an end more ultimate and comprehensive than reading a text-book or passing an examination. It is through such organization of conative tendencies that the self comes to possess and to recognize its own permanent unity and identity in the various phases of its life history, past, present, and future, actual and possible. Only in so far as the self of the present moment is connected by such continuity of interest with the self of past moments, can it *own* the action of the past self, and feel responsible for them. Now it is especially for what is directly or indirectly due to his own voluntary decisions that a man feels responsible. This is because voluntary decision between alternative lines of conduct essentially involves an appeal to the self as a unified system of interest.

Actions which are Intentional but not Due to Voluntary Decision. — Action is intentional so far as we have ideal prevision of its course, the end to be attained, and its collateral consequences. All actions due to voluntary decision are intentional. But the inverse is not true. Routine conduct may be intentional without involving any decision or resolution. We intentionally eat at regular meal-times, and do the details of business in the accustomed order, taking at the accustomed times customary recreation. But all this may take place as a matter of

course. We may never even vaguely raise the question whether we are to do these things or abstain from doing them.

Even when there is a conflict of tendencies, intentional action does not necessarily presuppose a voluntary determination. A man may be led by the interest of an exciting meeting to stay on at it, even though he feels that he ought to go home and go to bed. He stays on in spite of an opposing tendency which creates misgiving and discomfort. Yet he may never distinctly determine to stay instead of going. He simply drifts into his actual course of action. The conflict is a mere brute trial of strength between competing tendencies, not a comparison of ends resulting in a preference of one to the other.

Self-consciousness as the Essential Factor in Voluntary Decisions. — What is distinctive of voluntary decision is the intervention of self-consciousness as a coöperating factor. The effect of realizing this or that special conation is considered in its bearing on the general system of interests belonging to the constitution of the self as a permanent unity. If a conation is realized, the completed action becomes part of the life history of the agent. If in contemplating it beforehand the agent takes this into account, if he asks himself whether he really wants this action to become his action and so to become included in his own conception of himself, he is on his way to the forming of a voluntary decision. The decision may follow immediately, or it may not take place until after a process of deliberation. Deliberation intervenes when more or less time is taken in mentally realizing from various points of view the bearing of the contemplated course of action on the unified system of interests of the self as a whole. Suppose, for instance, that

I have to decide whether or not I shall become a candidate for a certain appointment. I mentally dwell on the trouble and unpleasantness connected with the competition and the likelihood that after all I may be rejected. I consider the nature and amount of work which I shall have to do, if I am appointed. The work may involve much uncongenial drudgery, likely to interfere with cherished pursuits for which I feel myself to be better fitted. On the other hand, I have to take into account the attractions of an increased salary, a wider sphere of usefulness, and a more distinguished official position. I turn over these points in my mind in their connection with each other, endeavoring to appreciate their relative importance in the organized system of my life's interests. Finally, the process comes to a conclusion by transforming itself, perhaps more or less abruptly, into a settled determination either to apply for the post or not to do so.

We may describe a typical process of deliberation as follows: A certain line of action being suggested, I ideally develop the conception of myself as I shall be if I carry it out so as to make it part of my actual life history, and on the other hand I ideally develop the conception of myself as I shall be if I refrain from acting in this way. I thus follow out the representation of a hypothetical self in more or less detail, until I have formed a decision, or, to use an expressive phrase of popular language, until I have made up my mind.

Motives and their Fluctuations. — The term "motive" is ambiguous. It may refer to the various conations which come into play in the process of deliberation and tend to influence its result. Or it may refer to the conations which we mentally assign as the ground or reason of our

decision when it has been fully formed. In other words, a motive may be either a motive *for* voluntary decision or a motive *of* voluntary decision.

It is in the first sense that the term is used when deliberation is described as a *weighing* of motives. This is a convenient metaphor, but very apt to mislead. When we weigh things, the presupposition is that they have already a fixed weight independently of the process of weighing them. The weighing is merely a way of ascertaining what this predetermined weight is. But the strength of motives is no such fixed quantity. It varies in and through the process of deliberation itself. When I first begin to consider whether I shall become a candidate for an appointment, the prospect of an increased salary may influence me strongly. But as the process of making up my mind develops, this motive may come to weigh less and less with me. It may almost cease to be a motive at all.

This holds good of the peculiar dominance which motives acquire when they cease to be merely motives for deciding, and become motives of a decision already formed. It is untrue to say that the motives of the decision were the stronger from the outset, so that the decision merely acknowledges a preëxisting fact. On the contrary, it is in the decision itself and the process of deliberation which leads to it, that the motives which are the ground of it gain the strength which enables them to determine conduct.

What is a Voluntary Decision? — So far we have dealt only with the conditions under which a voluntary determination emerges. We have yet to ask what is its nature.

Clearly it consists in a certain predominance of conative tendencies. But wherein does this predominance consist? In all probability the only ultimate answer is that we are

here confronted by a unique differentiation of conative consciousness incapable of exhaustive analysis and description.

There is, however, room for analysis and descriptions which do not pretend to be exhausted.

In the first place, it ought to be plain, after what we have already said, that voluntary decision is no mere mechanical resultant of the play of tendencies partly reënforcing and partly neutralizing each other. The strength of the prevailing motives is no mere remainder left over after subtracting the strength of counter motives. The analogy of the mechanical composition of forces is utterly inapplicable. In forming a resolution I may have great difficulty in making up my mind, because the pros and cons appear equally balanced. But when the resolution is once made, it may be in a high degree firm and stable. I may carry it out with unflinching vigor and pertinacity when once the Rubicon is crossed and my mind made up.

The motives which constitute the ground of decision are the only motives which remain operative after the decision is made and so long as it is persisted in. The opposing motives which played a part in the deliberative process cease to be motives when deliberation is over. The corresponding conative tendencies either cease to be felt or they survive only as difficulties and obstacles in the way of carrying out our resolution. Whether they will persist or disappear depends on the special circumstances of the case. Subsequent conditions may be such as either to keep them alive or to divert attention in other directions. When a man with a craving for drink resolves to abstain from it, he cannot by so doing abolish the animal appetite itself. The animal appetite is maintained by organic conditions which are beyond his control. In carrying out his decision

he has to do battle with it. On the other hand, if in spite of conscientious scruples he resolves on indulgence, the conscientious scruples soon cease to give him any discomfort. They disappear as he drinks. It is a broad way that leadeth to destruction. Regulus, in determining to return to Carthage, could hardly dismiss from his thoughts all that he was giving up and the violent death which awaited him. Probably if he had decided to remain at Rome, he would not have been troubled in nearly the same degree. Surrounded by his family and friends, and with all kinds of congenial channels open for his activity, he would probably have been able to avoid dwelling on the thought of his violated promise.

Further, voluntary decision is essentially characterized by a certain belief. It finds expression in the explicit affirmation or the implicit assumption that so far as depends on us as we are at the time of deciding, we shall, on the ground of certain motives, act in a certain way in preference to other possible lines of conduct. In voluntary determination, "I will" is also "I shall." Indeed, we find the two forms of expression used interchangeably in popular speech as if they were synonymous. Of course, the judgment "I shall" is conditional. It means that we are going to do something if we are not prevented by obstacles. This reservation need not refer merely to external hindrances. In saying "I shall do this and not that," we may be aware of the likelihood of counter conations arising strong enough to break our purpose. When a man says, "I am going to give up smoking," he does not mean to exclude the possibility of future temptation proving too much for him. The self to which the judgment refers is the self at the moment of decision as he is then conscious of it. It is more or less of a presumption, and often an

ill-founded presumption, that this self will not alter so as to make us act contrary to our present resolve.

Finally, the self of self-consciousness receives in deliberation and voluntary decision a unique qualification. It is only in these processes that we become aware of ourselves as free agents.

Freedom of the Will. — Let us put ourselves in the position of a person who is engaged in making up his mind which of two alternative ends he will pursue. Plainly his future action must appear to him as not yet determined; for it depends on his decision, and what this decision will be is not determined until his mind is made up. Further, the kind of indeterminateness which appears to him to attach to his decision is not at all like that of a future event which is beyond his control. For the indeterminateness of this is due merely to his ignorance. It can be removed merely by waiting to see what will take place, or by obtaining data which enable him to foresee the course of coming events. But a man cannot merely wait to see what his own voluntary decision is going to be; he cannot do so because he has to make it himself. Nor can he calculate beforehand how it is going to turn out. This is impossible, because from the nature of the case he cannot be in possession of the requisite data. He cannot found his calculation on the relative strength of motives. For the relative strength of motives is not a ready-made datum which persists unaltered through the process of deliberation, and into the moment of decision. As we have seen, the metaphor of weighing or balancing is here profoundly misleading. Motives become stronger and weaker, and even come into being or disappear in the process of making up the mind. And the person who is making up his mind can-

not predict beforehand what motives will become predominant so as to constitute the motives of his voluntary decision. He cannot know this until the decision is actually made. Before this the assertion that some one motive or group of motives is already of such strength as to determine his choice, is tantamount to the assertion that he is not engaged in choosing at all. In other words, it is equivalent to a denial of the freedom of his will; and this again, if we mean by will voluntary decision, is equivalent to a denial that he has the power of willing at all.

This account of what is meant by free will resolves it into self-determination. My future decision is indeterminate for me before it is actually formed, because I have myself to determine it. So much at least is necessary to the conception of freedom, and so far there can be no reasonable doubt that we really are free. But according to a certain school of philosophers this is not sufficient. To understand their position we must approach the subject in a new way. Instead of placing ourselves at the inner point of view of a person who is engaged in making up his mind, and considering his mental attitude, we must suppose ourselves to be looking back on his already formed decision, and the deliberation which led up to it. The question then arises whether there is any stage of the completed process which is not an outcome of previous stages and of preëxisting psychological and other conditions, — including the total character, past history, present circumstance of the self. Those who simply identify freedom with self-determination say yes, those who go by the name of libertarians say no. According to the *libertarian* or *indeterminist* there is in the moment of decision a possibility of alternate choice independent of all preëxisting conditions, including even the whole nature of the person

choosing. On the other hand, those who regard self-determination as in itself constituting freedom, say that the self, in determining its own decision, does so in accordance with its own nature. They profess themselves unable to understand what self-determination could mean, and therefore what freedom could mean, on any other supposition, — if any other supposition were intelligible.

To discuss this vexed question would lead us beyond the limits of psychology into ethics, metaphysics, and theology. However it may be answered, we can at least say the position of a person deliberately making up his mind which of two courses he will pursue, is perfectly unique. There is nothing else at all analogous to it. And certainly we can find no better word to indicate its peculiarity than *Freedom.*

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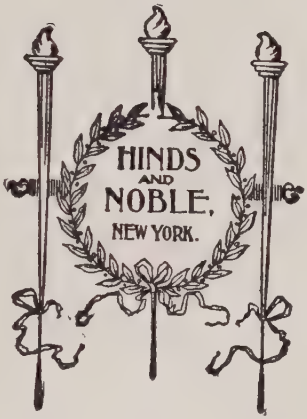

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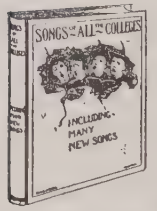
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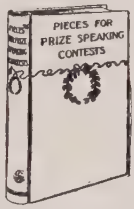

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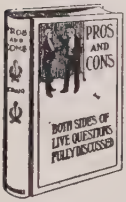

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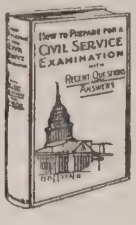

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